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T.U.C. Wages Policy

A MONTH ago, members of the Trades Union Congress special economic committee discussed wages, profits, and prices with the Chancellor of the Exchequer, when they made plain the T.U.C. desire—or perhaps even insistence—on steps to limit profits. Shortly afterwards, Mr. Gaitskell announced dividend limitation. It is not surprising that the annual report of the T.U.C. General Council, published earlier this week, continues on the same note. Wage restraint apparently is to be abandoned and the trades unions must "endeavour to maintain the real wages of their members by demanding wage increases." The report considers, however, that the present price and production controls are insufficient "now that the relative wage-price-dividend stability of the last few years has broken down and everything is in movement" to prevent wage increases from being offset by price increases; it does not consider inflation likely as the result of these increases, but utters a warning, expressed with an absence of emphasis amounting to feebleness, of "considerable social and industrial strain" to come. The Government is exhorted to establish as soon as possible a new and more stable level of prices, which would earn the "wholehearted support of the trade union movement". Subsequent emphasis in the report on the importance of honouring industrial agreements reached through constitutional machinery, and a timely reference to a coming reduction in the standard of living of the community as a whole through higher taxes or prices, or both combined, do not absolve the T.U.C. from the charge of irresponsibility. This is not the place to trace its influence—probably considerable—on the policy of the present Government. Its influence, however, on trades unions in this

country is very great, and is doubtless largely responsible for the decision of the Confederation of Shipbuilding & Engineering Unions last week to press its new claim, which if granted would cost the industries concerned over £100 million a year. With this claim and that of the three railway unions—besides many lesser ones—under discussion, there is imminent danger of a rapid increase in the inflationary movement that has already begun.

More Muddled Thinking

IN our August 10 issue under the heading "Muddled Thinking on Railway Wages," we commented on two articles in *The Railway Review*. In the current issue of that journal "Rank and Filer" contributes some comments on our editorial, and these we reproduce elsewhere. Two points he makes call for a reply. The first is that he quotes the first four words of the sub-title of this journal, "A Journal of Management, Engineering and Operation," and goes on to say that *The Railway Gazette* "will not object, therefore, if its readers assume that, when it comments on labour relations, it represents the views of the 'Management'." *The Railway Gazette* is an independent publication which deals with all aspects of railway affairs in every part of the world, and it is not given to "representing the views" of any particular section. We can imagine occasions when a belief that our views represent those of the "Management" of British Railways might be as embarrassing to the latter as it would be to us! "Rank and Filer" also quotes our concluding paragraph, which was: "If there was any assurance that the arguments which will be advanced in support of the present wage claim would be no more cogent than those which appear in these two articles [in *The Railway Review*], the British Transport Commission might rest easy in the assurance that no impartial body would add to its labour costs." He appears to read this as meaning that no more cogent arguments can be advanced; the inference we intended to convey was the reverse.

Indian Purchasing Mission Arrives in Britain

AN important stage in the negotiations preceding the placing of contracts for locomotives, carriages and wagons under the Indian Railway Board's 1952-53 construction programme began this week, with the arrival in Great Britain of an Indian Purchasing Mission headed by Mr. F. C. Badhwar, Chairman of the Railway Board. The mission is making a six week tour of this country and the European Continent for discussions with manufacturers and Mr. Badhwar is to be accompanied by Mr. K. B. Rao, Director-General of the India Store Department in London and Mr. K. Sadagopan, Director of Finance of the Railway Board. The rolling stock programme for 1952-53, which was recently approved by the Standing Finance Committee of the Indian Parliament, is estimated to cost Rs.42 crores, of which Rs.15.56 crores is to be spent overseas. A total of 227 locomotives is to be built, 70 of which will come from abroad, and some details of the tenders concerned were given in our July 6 and 20 issues. While on tour Mr. Badhwar will visit a number of steel foundries to gain knowledge for setting-up a railway steel foundry at, or near, Chittaranjan. He will also endeavour to secure machinery and equipment for the integral coach factory at Perambur, near Madras, for which a separate organisation is already making preliminary arrangements.

G.N.R.(I.) Future Still Obscure

THE stockholders of the Great Northern Railway (Ireland) have been considering a statement made by the Northern Ireland Minister of Commerce in the Senate on August 16. The Minister was reported as saying "the policy of the Government and of its predecessors is also the policy of Parliament laid down in Acts and endorsed in resolutions." The G.N.R.(I.) Stockholders' Protection Association in a circular quotes the Northern Ireland Transport Act of 1935 as an example of a policy laid down but never enforced, and the White Paper of 1946, providing

for the merger of the G.N.R.(I) with other undertakings in the north, was never observed. Although in January of the present year it was announced that the G.N.R.(I) was to be acquired by the Dublin and Belfast governments jointly, in August the company is still a "shuttlecock for controversy" in which it has no concern. The governments have so far failed to remunerate the stockholders for the exploitation of their property; the break-up figure of £10,876,000 assessed by Government advisers two years ago has been substantially increased by the subsequent rise in prices. The Association considers that the directors and stockholders should ensure that the case of the company be exposed in the pending proceedings before the Transport Tribunal in Northern Ireland. At the time of going to press we learned that the Dublin Minister of Industry & Commerce was due to meet the Northern Ireland Minister of Commerce in Belfast yesterday to discuss "a compromise proposal" for the railway, in which, it is understood, the Dublin-Belfast main line would be managed by a joint body, and the remainder of the system in Northern Ireland come under the Ulster Transport Authority.

Overseas Railway Traffics

THE recent substantial advances in Antofagasta (Chili) & Bolivia traffics were maintained in the fortnight ended August 10, and aggregate receipts for the current 32 weeks are now £1,831,486 higher, at £3,779,890. The improvement in traffics during the first week amounted to £72,710, at £141,590 and in the following week receipts rose by £56,090 to £116,940. Following successive increases of G 171,218 and G 209,461 in the two weeks ended August 10, Paraguay Central traffics were G 821,297 higher on the aggregate and amounted to G 1,922,947 for the six weeks, since July 1. On the Costa Rica Railway a restricted service was operated between June 1 and 10, but receipts showed a slight advance on those for June, last year. Traffics for the month were up by C 25,461, at C 1,121,590 and ended the financial year 1950-51, C 720,146 higher than for the previous year, when total traffics were C 10,579,977. Gold Coast traffics for June amounted to £246,509 and brought the total for the current 13 weeks up to £803,671, an £81,153 improvement over 1950-51.

Anglo-Irish Travel

A DISPROPORTIONATE importance on both sides of the Irish Sea has been given, in our view, the events at Dun Laoghaire on August 10 and 11. A brief reference was made in last week's issue to the fact that on August 10 difficulty was experienced in dealing with the rush of potential England-bound passengers, many of whom were left behind. The fundamental facts appear to be so simple that it is surprising that they could attract the attention of some of the persons involved in the subsequent dispute. The arrangements for sailing tickets are well known, and the capacity of the shipping provided on this route, as on others, is not elastic. If a large number of passengers elects not to travel by a service for which sailing tickets have been issued and will take a chance of securing accommodation on a later sailing, particularly at a weekend during the peak holiday period, no surprise should be occasioned if some fail to secure passages. Psychologically, it was a mistake to have an uncontrolled relief sailing, and that by a smaller ship, on the same day as two controlled sailings. There can be no doubt of the value of the Anglo-Irish services and traffic to both parties involved. There is undoubtedly room for greater co-operation between and for improvements on, both sides of the Irish Sea, but these would best be undertaken in a more dignified atmosphere than that which has been apparent during the past fortnight.

Boat-Train Running and Customs Delays

OF far greater moment to cross-Channel passengers not only on the Irish but on many of the Continental services is the delay which is being occasioned by Customs formalities at British ports. Recently there has been a

considerable increase in the vigilance displayed by these officers and a much keener scrutiny of luggage and so forth being brought into the country. Younger examiners, who perhaps lack the intuition of men with greater experience, seem to be partly responsible. By virtue of their calling, Customs examiners must be an unloved race, but there seems little doubt that recently they have stepped up their examinations in a way which is not merely causing resentment on the part of travellers, but which is gravely delaying the departure of boat trains. Many of these trains are now arriving at their destinations between two and three hours late. The public is inclined to condemn the railways for faulty running, whereas the true reason is to be found in the delayed departure time. At the end of 1948 a Government working party was set up under the chairmanship of Mr. L. F. Morrissey of the Treasury. This was to consider and report on passenger handling facilities for tourists at the ports and the general remit was to make less onerous the entry of visitors to this country. What, if anything, has been the result of the labours of this body?

South African Railways Meet Industrial Expansion

MR. P. O. SAUER, South African Minister of Transport, speaking at the opening on July 13 of the Redan-Grootvlei line of the South African Railways, answered accusations that the railways had curtailed the expansion programme of the former Government. The schemes eliminated were mainly for luxury hotels in Cape Town and Pretoria, a new building for the Ministry of Transport in Pretoria, and a £1,000,000 air-conditioned station at De Aar; they "would have contributed nothing to the efficiency of the railways." No important expansion project has been cancelled, witness the rebuilding of the Cape Midlands line, the new goods depot at Prospect, the extension of the line from Odendaalsrus, and the new Grootvlei line. Last year traffic increased six per cent. During the first five months of the year, 1,500,000 tons more coal were carried than in the corresponding period last year. In spite of the rapid increase in traffic, emphasised Mr. Sauer, "the Administration not only succeeded in keeping pace, but even exceeded it."

S.A.R. Post-War Expenditure

ON the same day, Mr. D. H. C. du Plessis, Acting General Manager, South African Railways, in a speech at Redan, said that in the capital and betterment estimates for the current year, £25,000,000 had been provided for new workshops, workshops improvements and running sheds. Since 1943, 457 new steam locomotives, costing some £10,000,000, and 38 electric units, totalling £1,600,000, had been acquired. Contracts had been placed for 100 more steam locomotives at a cost of £1,600,000 and 50 more electric units, at £2,000,000. Tenders had been received or called for the building of another 115 steam locomotives, and 35 electric units. Some £38,000,000 had been spent since 1943 on 24,000 new wagons. On the civil engineering side, the post-war expenditure up to March 31 last was £27,114,000. "Today," concluded Mr. du Plessis, "with the opening of the Grootvlei-Redan line, we have reached yet another milestone in the railways' efforts to assist industry in the development of our base mineral resources."

Advantages of Steam Traction

AN example of ill-informed criticism of the railways occurs in an article by Mr. John Hall in the *Daily Mail* last week on coal used in Britain. The railways, he states "are huge wasters" of coal; of the 14.5 million tons which they consumed last year—all by locomotives, he implies—"only 5 per cent. was used efficiently." The solution he proposes is "more electrification and more diesel-type locomotives." Mr. Hall's figures are not so inaccurate; locomotive coal consumption in 1950 was some 13.75 million tons, and 7 per cent. might be a fair average proportion of coal used efficiently in normal working. Where, however, he is wrong is in implying that the low

thermal efficiency of the steam locomotive justifies its early replacement in Britain on a large scale by other forms of traction. The case for the steam locomotive was put by Mr. R. A. Riddles, Member of the Railway Executive for Mechanical Engineering, in his Presidential address to the Institution of Locomotive Engineers last November. Discussing its advantages, including cheapness, compared with other forms of traction, he pointed out that despite its low thermal efficiency, actual fuel costs per unit of power at the drawbar did not rank high in total relative costs, and that new mechanical developments were reducing maintenance costs and increasing availability. Besides this, other traction media, electricity, diesel, and gas turbine, are constantly under review and experiment by British Railways, and introduced, when proved satisfactory, as far as monetary and other shortages allow.

A Coincidence of Defects

THE derailment at Clipstone on May 12, 1950, fortunately unattended by casualties, was another case where some irregularity in the track coincided with one in the locomotive and brought about a sudden critical condition in which enough force was developed to cause a wheel to mount the rail and pass across it. Colonel R. J. Walker's report on the case, which is summarised in this issue, shows a peculiarity of the circumstances to have been that the track had been inspected by no fewer than four experienced men within the preceding week, when its defects were seen but not thought to justify immediate action or a speed restriction. The normal limit is 60 m.p.h. The engine had been permitted to run with three broken springs, and the first breakage had been made known five months before. Colonel Walker considers that the error of judgment committed by the permanent way inspectors might have been influenced by knowing that the track was due for immediate renewal, while they may have thought the heavy change of cross-level to be no more than a reasonable run off, although in reality it was very different.

Feed Water and Firebox Maintenance

THE point at which feed water is delivered into the boiler now seems to be generally by means of some form of top feed. There are, however, many notable exceptions. Elsewhere in this issue is an illustrated article dealing with the top feed method of supplying boiler feed water and describing its influence on the life of the wrapper plates of steel internal fireboxes. It further directs attention to a somewhat novel method of delivering the water into the boiler. In place of delivering the feed on to some form of deflecting tray, which is usually done, the water is sprayed through the steam space, the only other fitting required being a protecting saddle-shaped tray placed on the main internal steam pipe below the top feed fitting. The top feed combined duplex check valves and spray nozzle are fitted on the top of the boiler well forward on the barrel. Today this appears to be the position most favoured rather than more in the middle of the barrel as formerly. In the interest of boiler maintenance a top feed, placed well forward on the barrel, would now seem to be approved practice.

International Railway Co-operation

A SURVEY by Mr. C. E. R. Sherrington, Director of the Research Information Division of the Department of the Chief Research Officer, British Transport Commission, of recent developments in international co-operation between railways, with special reference to Europe, appeared in the April-June issue of the *Transport & Telecommunications Review* of the United Nations Department of Economic Affairs. The year 1950, Mr. Sherrington points out, provided a landmark in the field of international railway co-operation in Europe. The survey deals with the non-Governmental international railway organisations—excluding, that is, the Berne Conventions, the Central Office for International Railway Trans-

port, and the Inland Transport Committee of the Economic Commission for Europe, which were dealt with in a previous issue of the *Review*.

After tracing briefly the history of the International Union of Railways (U.I.C.) and other international associations of European and contiguous railways—which bodies were dealt with in *The Railway Gazette* of December 4, 11, and 18-25, 1942—up to the end of the second World War, Mr. Sherrington describes how the U.I.C. was resuscitated. This was largely the result of a meeting in London late in 1945 at which Mr. John Elliot, now Chairman of the Railway Executive, and then Deputy General Manager of the Southern Railway, played a prominent part. It was also due to the preliminary labours of the then President of the U.I.C., the late M. Robert Le Besnerais, General Manager of the French National Railways. Credit is also due to the efforts of the British and American authorities in Germany, who were quick to realise the importance for the rehabilitation of the German and European railways of co-operation through international railway organisations. Progress thereafter was rapid. At the eighth meeting of the General Assembly of the U.I.C. in November, 1950, the majority of European, Near Eastern, and North African railways were represented; against this, there was the previous defection of U.S.S.R., and certain railways in the Far East which at one time between the wars had been members largely by virtue of the Trans Siberian, for obvious reasons were no longer represented. One postwar development stressed by Mr. Sherrington is the adoption of English as a third language, additional to French and German, for U.I.C. publications, which has been facilitated by the participation of British Railways in all the committees of the Union, besides the commercial committees to which their participation was limited before the war. Proceedings at meetings, however, are usually conducted in French, which is necessarily the language of the U.I.C. Secretariat in Paris. It is questionable, however, whether there was ever a real language difficulty before the war. French probably is the international language fittest for railway purposes, at least in Europe and the Near East, largely because of its clarity; English is still ambiguous in its technical railway terms, as was found during the war in contacts between British and American railway troops.

In contrasting the U.I.C. and the Association of American Railroads, Mr. Sherrington outlines the very comprehensive activities of the latter. He shows, however, that such comprehensiveness in control over member railways' activities, as in the A.A.R. Car Service Division, which deals with wagon supply on a national basis, is impossible in Europe; this is not only because of political barriers, but also of economic factors, such as the greater consumption in Europe of agricultural products within the States of their origin. In pointing out the responsibility of the Marshall Plan for much of the progress since the war in the reconstruction of European railways, he suggests as another possible cause of this progress, the background of an American viewpoint. The American view, of a continent undivided by the nationalist aspirations of European States or by national tariff and other barriers, in impinging on postwar Europe has, Mr. Sherrington says, encouraged the idea of a federation of States, and "though it is impossible for railways as railways to eliminate many of the burdens of international movement, the U.I.C. has played no inconspicuous part in easing some of them. It, in its turn, must give American opinion and backing some credit..." Without disparaging the generosity and magnificent achievements of Marshall aid, it is possible to doubt whether the influence of American thought on European railway officers has been as great as Mr. Sherrington suggests. Both between the wars and before 1914 there was, as there is today, a spirit of enlightened co-operation amongst European railwaymen, who have been among the first to realise the importance of demolishing international barriers.

The description of the five Permanent Commissions of the U.I.C. and their duties is succinct and lucid. It is followed by a summary of the chief developments of 1950, most of which have been referred to in this journal from time to time. They include the inauguration of the Office

de Recherches et d'Essais (O.R.E.) at Utrecht, a research and test office under the day-to-day management of the Netherlands Railways; that of the *Centre d'Information des Chemins de fer Européens* (C.I.C.E.) in Rome, an information and publicity unit for which the Italian State Railways have assumed managerial responsibility; and the *Bureau de Documentation des Chemins de fer* (B.D.C.) in Paris. The last is a clearing house for the exchange of technical and other data, and is an enlargement of a French National Railways centre of that name; unlike the other new creations, it works in continuous contact with the U.I.C. Secretariat, and was initiated by the Special Commission for the Exchange of Documentation—of which Mr. Sherrington is Chairman. Close contact is maintained with countries where English is the language of the railway administrations through the Research Information Division of the B.T.C. Another event of 1950 was the agreement whereby the R.I.V. and R.I.C. organisations regulating European freight and passenger vehicles respectively, came into closer relationship with the U.I.C., thus reducing the chances of duplication of effort.

Capacity on Single Lines

IT is possible to increase to an extent the number of trains over single-line sections without providing additional facilities or extending the average running times unduly. Attempts to increase the number further may result in congestion, increasing the running times, and thereby the cost of working, out of proportion to the income derived from the running of the additional trains. In an address to the Rhodesia Section of the Southern Africa Division of the Institute of Transport, at a Conference meeting in Bulawayo on June 14, Mr. W. Heckroodt, General Manager, South African Railways, gave an example of a single line in South Africa on which, without material alteration of available facilities, the daily service was increased from 34 to 44 trains. An attempt to add ten more trains a day resulted in an increase of 71 min. in the average running time per train and a consequent increase in trainmen's wages.

The potential or maximum theoretical capacity of a section has been defined as the maximum number of trains of one class, with uniform running times, that can be run if they are distributed evenly throughout the day, and each train crosses an opposing train at each crossing place. The measure of the capacity is therefore the interval between following trains crossing opposing trains at each loop. The interval at which following trains can be despatched would consequently be determined by the sum of the running times of one train from one crossing place to the next and that of the opposing train in the reverse direction over the same section.

The theoretical maximum capacity of a single line section can be determined by dividing the number of minutes in a day multiplied by two, by the sum of the longest running times involved for two opposing trains. Mr. Heckroodt discussed, giving an example, the effect of watering stations on the capacity of a section and then referred to investigations carried out in South Africa into the time lost at stations through the exchange of single-line tokens. The possibility of using a non-token method of train control on single lines without extensive track circuiting or colour-light signalling is being examined by the S.A.R.

Experience in South Africa has shown that the capacity of almost any single-line section is elastic, enabling sporadic increases in particular traffic to be catered for, without the provision of additional facilities, often at great cost. When, however, it appears that the increased flow of traffic will continue more or less uninterruptedly for a time, it is usually worth providing them. If, after saturation point has been reached, it is still impossible, for one reason or another, to provide additional facilities, two methods are still possible. One is to increase the tonnage conveyed without affecting the number of trains run; this can be done where the track will allow more powerful engines to be used. The other method is to increase train loads hauled by the locomotives normally used, by allowing for an in-

crease in section time where required. On one line in South Africa it was possible to increase the load from 550 to 750 tons, using the same type of engine, by extending the running time per train by 40 min.

In the U.S.A. it is considered that the problems of running extra long goods trains are outweighed by the savings derived from running fewer trains and the avoidance of expenditure on track doubling or other facilities.

Reconstruction on the German Railways

THE building activities of the German Federal Railways after the currency reform were not exclusively, or even mainly, concerned with war damage repair. Most of the expenditure concerns maintenance and renewal, with which war damage repair is almost inextricably mixed, a point stressed by Herr Erich Halank, of the Federal Railways, in a paper published in the June, 1951, issue of *Der Eisenbahnbau*.

The currency reform gave rise to a completely new stock-taking by the Federal Railways which prepared a comprehensive inventory of all its installations, with an assessment of the war damage still unrepaired. It showed that the nominal value of the assets of the Federal Railways, excluding the French Zone, amounted to DM. 16,900 million, reduced to DM 9,200 million because of depreciation. The assessment of the war damage still to be repaired after December 31, 1949 amounted to some DM. 1,000 million. Damage was concentrated mostly on the Cologne, Essen and Stuttgart areas.

The Bundesbahn has been unable to carry out maintenance and renewal on a scale laid down in its programmes. As an average over the years 1946-50, only 75-80 per cent. of the maintenance programme and no more than 35 per cent. of the renewal programme has been fulfilled. In consequence, the state of repair of the structural installations has further deteriorated, and more inroads are being made into capital assets.

The Bundesbahn, alone among the transport agents of the Federal Republic, has the sole responsibility for the repair of the war damage, whilst the expenses for repairing the roads and inland waterways are borne by the public. On the present basis, it may take another twenty years before the consequences of the war are fully overcome. There is little money available for new construction, apart from occasional credits earmarked for certain work. The constant rise in wages and in the cost of materials, accompanied by reductions in the amount of the credits available, has led to even more drastic restrictions in this field.

A matter of special concern is the obsolescence of the permanent way. Even on the most important main lines, rails and sleepers must be kept in service for long periods. Thirty-six per cent. of all sleepers are more than 20 years old. Broken rails, derailments, and speed reductions are the consequence. In March, 1951, there were 61 derailments due to permanent way deficiencies. Some 345 permanent speed restrictions had to be imposed.

Within the limits of the credits available, the output of work is satisfactory. A proportion of permanent way maintenance work is carried out by contractors' men. In line with developments in other countries, and in spite of unemployment, there is a marked tendency towards the mechanisation of permanent way maintenance work, mainly to improve the quality of the work. The complete closing of a line, for a short period to permit an efficient wholesale renewal of the permanent way was often found more satisfactory than patchwork maintenance with resulting inconveniences extending necessarily over a much longer period.

In bridge construction, the emphasis was still on war damage repair, especially on the substitution of permanent bridges for temporary bridges to reduce drastic speed restrictions. At the beginning of 1951, the number of railway bridges still not in use had been reduced to 95; some may not be restored. Of fourteen Rhine bridges in the British and American Zones, six are again in operation as double-track bridges, and three as single-track bridges.

The remaining five are still unusable (Wesel, Rüdesheim, Mainz North, Speyer, Gernersheim). All bridges over the Danube and Main and all but two over the Weser are again in operation.

Whilst there still remain considerable arrears of war damage repair work, there are also misgivings as to the state of some of the bridges not affected by the war. Some are of considerable age, and have not been properly maintained for ten years or so. Keen supervision has, so far, fortunately prevented major accidents, but the situation is far from satisfactory.

Similar conditions apply to signalling. Thousands of signal boxes are old and require a disproportionate maintenance expenditure. In all, 214 signal boxes are still on an emergency basis, and must be replaced without further delay. Within the limits of the credits available, when entire signalling installations have to be renewed opportunity is naturally taken to improve the technical standard. Among these improvements is the introduction of centralised signal cabins ranging over much greater areas. At Cologne, for instance, a single central control cabin is now being built for the centralised operation of Cologne Central, and Cologne-Deutz Stations with their carriage sidings. Another centralised signal cabin will control the entire line between Nuremberg and Regensburg.

Some progress is also being made in communications, including ultra-short wave communications between signal boxes and trains. In this field, important improvements in efficiency can be achieved with comparatively small capital expenditure.

War damage to tunnels has now been largely overcome, but there is concern at the general state of repair of some of the older tunnels, especially the lack or deficiency of waterproofing. During 1949-50, some DM. 5,000,000 have been spent for this purpose alone. Unrepaired war damage to structural parts of stations is assessed at DM. 100,000,000 in spite of great efforts towards reconstruction. By far the greatest arrears of war damage repairs concern buildings of all kinds, including station buildings, office buildings, sheds, workshops and houses for personnel. An expenditure of over DM. 500,000,000 remains to be faced under this heading alone. In some places, the local authorities have granted financial assistance for the reconstruction of the station, and, there, modern station buildings of efficient and pleasing design have been erected. Otherwise, priority must be given to buildings intended for freight traffic. More than 38,000 dwellings have been erected in Western Germany since the end of the war. Another 50,000 are required.

Steam-Turbine Locomotives

FEW experimental realms in steam locomotive design can have been explored by steam locomotive designers with more persistence and less ultimate success than that of steam-turbine propulsion. As far as can be traced, the first turbine-driven locomotive appeared in Italy in 1907. In Great Britain the first experiment was probably the Reid-Ramsay turbo-electric design of 1910, built by the North British Locomotive Co. Ltd. and tried on the North British Railway. But this locomotive never entered regular service, neither did its successor, a similar but more compact Ramsay design built by the same firm in 1922, and tried over Lancashire & Yorkshire metals. These trials continued over 18 months, between Bolton and Southport, with trains of empty stock, and it was stated at the time that the results obtained would be used in the design of a simplified, lighter, and more powerful design; but this did not materialise.

Soon after, the Ljungström Company in Sweden developed an application of steam-turbine propulsion to locomotives, and this was incorporated by Beyer, Peacock & Co. Ltd. in a turbo-condensing locomotive which was completed in 1927, and ran for some time over the Midland main line of the former L.M.S.R. between St. Pancras and Manchester. From the actual performance point of view, these tests were successful; the locomotive was used on express passenger trains, and proved itself capable of doing work equal to, if not superior to, that of the Midland three-

cylinder compound 4-4-0 engines used normally on these trains. But maintenance of the experimental locomotive proved troublesome and costly, and, like its predecessors, it soon vanished into oblivion.

It was not until 1932 that the Ljungström Company, in conjunction with Nydquist & Holm, of Trollhättan, produced the first of a series of locomotives for the Grängesborg-Oxelösund Railway of Sweden which might be claimed as the only really successful application of turbine propulsion to locomotives. Notwithstanding the advantages derived from condensing, in increasing the overall efficiency, and—where water supplies may be scarce or of unsuitable quality—in conserving the water supply, it was decided in this design to do away with the condensing plant, which in previous locomotives had proved costly to build and complicated to maintain. These Swedish engines have given good service, with substantial loads, and with an economy in coal consumption of up to 10 per cent, as compared with steam locomotives of comparable power.

It was the success of this 1932 Ljungström locomotive in Sweden that encouraged Sir William Stanier, in conjunction with the Metropolitan-Vickers Electrical Co. Ltd., to equip the third of his L.M.S.R. Pacific locomotives, No. 6202, with turbine propulsion in place of reciprocating motion. No. 6202 took the rails in June, 1935, and in all British locomotive history, few locomotives have been the subject of such patient and long-continued experiment as this machine. It has taken its regular turn with the other Pacifics on the principal Euston-Liverpool expresses, and in the course of over 300,000 miles of service has shown itself their equal in both weight-hauling and speed capacity. In a series of tests against standard Pacifics, No. 6202 showed a coal economy of 3.7 per cent, as compared with a Pacific freshly out of the shops, and of 10.7 per cent, as compared with a Pacific which had run 19,500 miles since its last general overhaul. But a number of failures—the more serious of which kept No. 6202 out of service for extended periods—have resulted in the decision to abandon the turbine propulsion and to convert the locomotive to normal reciprocating drive.

Apart from Sweden, other countries have experimented with turbine propulsion, but apparently with similar lack of success. In 1924 the German firm of Krupp built at Essen a turbo-condensing locomotive of which little has since been heard. More recently the Pennsylvania Railroad, in conjunction with the Baldwin Locomotive Works, turned out its very large 6-8-6 type non-condensing geared turbine locomotive, which with its 16-wheel tender weighed 443 tons. This made the return journey of 580 miles between Crestline and Chicago daily and with passenger trains up to 1,000 tons, reached speeds up to 100 m.p.h., and developed a maximum of 6,900 h.p. Yet, although built in 1946, No. 6200 already has gone to the scrap-heap, for it was judged that the cost of maintenance did not justify the continuance of the experiment.

Most recent of steam-turbine locomotive trials has been that of the Chesapeake & Ohio Railway, which in 1948 introduced three of the largest locomotives ever built; indeed, the wheelbase of these, with their tenders, measured 140 ft. 4 in. overall, and the total weight of each engine and tender was 594 tons. The wheel arrangement was 4-6-2 + 4-6-2 + 0-4-0. These unwieldy machines have had an even shorter life, for, after a considerable period out of service, they have gone to be broken up no more than three years after their construction. The Pennsylvania and Chesapeake & Ohio failures are the more significant in that both companies, with their coal interests in the Alleghenies and the Appalachians, have been keenly anxious to find some efficient rival to the diesel-electric locomotive in which coal would serve as the source of energy.

It is probable that the equivalent of well over £1,000,000 has been spent, over the past 25 years, in this determined but apparently fruitless effort to adapt the steam turbine with all its advantages to locomotive work. Probably this chapter of locomotive history is now closed, and it may well be that the gas turbine, especially if it is found possible to use pulverised coal rather than oil to provide the fuel, will succeed where the steam turbine has failed.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Inter-Regional Transfers of Officers

August 18

SIR,—I thank you for publishing my letter of August 13 and for the editorial comment appended.

I assure you that I had not forgotten that the "Southern" had supplied the first two chairmen of the Executive and we are, of course, rather proud of it. I assume, however, that the Railway Executive does not choose its own Chairman and may, for all I know, resent the fact that a "Southern" man is imposed on what is practically an L.M.S.R. re-union!

In any case, the Chairman cannot intervene in all departments over what may appear to be trifles but which nevertheless have a serious effect on the morale of the staff which has to give up many well-tried practices in favour of inferior ones merely because the London Midland Region is the biggest boy in the family. The staff also suffers the indignity of seeing most of the better vacancies filled by L.M.R. men for the same reason.

Yours faithfully,

SOUTHERN MAN

[The Chairman of the Railway Executive is appointed by the Minister of Transport in accordance with the terms of the Transport Act, 1947. Only one of the six members of the Executive is a former L.M.S.R. Officer. We are aware of the feeling in the Regions on the subject of the standardisation of former L.M.S.R. practices but factually it is as well to keep the record straight!—Ed, R.G.]

Muddled Thinking on Railway Wages

August 13

SIR,—Your editorial article of August 10 on two articles which appeared in the August 3 issue of *The Railway Review*, contains at least one apparent distortion.

I refer to your allegation that there was a lack of unanimity between my view of the press treatment on the subject of railway wages and the view of the General Secretary of the N.U.R. You either misread the two references or you sought a difference of opinion for reasons known only to yourselves.

It was perfectly clear that whilst the General Secretary was definitely quoting press opinion which supported his argument for the restoration of railway wages' relativity with "outside" industries, my reference was as clearly based on something else, namely, the economic sickness of the industry and its effects on wages and conditions, and ultimately on the whole assessment of the success or failure of nationalisation.

You conveniently omitted to mention that the emphasis of my first sentence was on the economic sickness of the industry and secondarily on the labour shortage, which, I said, was only one symptom. The problem for which a solution is needed is this economic sickness. The problem of the labour shortage would, I believe, be relieved, if not solved if the former difficulty was remedied.

That the capitalist press and the Conservative Party and any other enemy of the idea of nationalisation will try to exploit the situation to discredit the principle of nationalisation is not surprising or unnatural. In our union there are not two views but one.

The General Secretary in his annual report, published in *The Railway Review* stated his view of the ways of the Conservative Party and of the capitalist press in these words:—"the propaganda of Tory politicians belittling nationalisation is for the most part a deliberate distortion of the real facts . . . Transport matters having become so deeply enmeshed in politics, every defect, real or imaginary, is made front page news, not however, for the purpose of remedial action, but as a stick with which to beat the Labour Government."

Unanimity?

You say that my assertion, that placing the interest of

B.T.C. stockholders first, deprives the workers of adequate wages and working conditions, ignores the fact that wages form a major part of working expenditure. I am not unaware that wages form part of working expenditure. But I do contest your assumption—and this is the real key to your objection to my article—that interest on B.T.C. stock equally forms part of working expenditure. The root of our different views lies in your claim that interest on compensation stock should be regarded in the same way as wages and conditions, as a part of working expenditure. Working results are what matters. As is clearly shown in the B.T.C. annual statistics, working results of the Commissions undertakings—which, of course, includes wages—indicated a very substantial net surplus.

It is only when interest charges, which exceed this net surplus by several millions, are made that the deficit arises.

Am I to assume that you advocate economies in working expenditure which will inevitably strike at the workers' standards and leave the interest drawers untouched? Raising charges may seem the easiest way out of our difficulties but there is no doubt that in the long run this will have the effect of limiting, if not reducing, non-essential passenger traffic besides antagonising a travelling public whose good will it is always necessary to foster.

Yours faithfully,

FRANK G. MOXLEY
Editor,
The Railway Review

36, Gower Place, W.C.1

[The point which we made was that the General Secretary thinks the Press is "responsible" when it "appreciates" that "the relative relationship between railway and 'outside' industry wages must be restored" but the Editor of *The Railway Review* condemns it as "capitalistic" if it takes opportunity "to discredit . . . the principles of nationalisation." On the financial side we believe that capital, equally with labour, is worthy of its hire. No railway trade unionist has had his income reduced as a result of nationalisation; many former stockholders have lost both capital and income. Since nationalisation railway wages have risen very substantially; interest on Transport Stock has remained unchanged though its value has depreciated. As our correspondent quotes the B.T.C. annual report, we would refer him to paragraph 59, page 42, of that report which states "... interest charges are a form of cost. . . . If equity capital were to be substituted for the loan capital, a very different set of considerations would arise."—Ed., R.G.]

Economics of Long-Distance Electrification

August 13

SIR,—Referring to Mr. S. A. Vincze's letter in your July 27 issue, I would like to comment:—

(1) I understand Mr. Vincze's cost comparisons between the a.c. and d.c. systems were based on Continental (and pre-war) prices. I query whether Mr. Vincze is right when he asserts that the Continental makers who have specialised in a.c. equipment are equally well qualified to advise on the d.c. system. For example, according to the *Directory of Railway Officials & Year Book*, 1950-51, Sweden has 3,838 route-miles electrified on the a.c. system, compared with 77 on the d.c. system, a mere 2 per cent.

In fact, I think that in the engineering of d.c. railways this country is at present substantially in advance of any other, and I do not think there is any d.c. railway electrification in existence on the Continent that can bear comparison with fully up-to-date British practice, as regards the economy with which good service is obtained. An example of this is the case of the French National Railways, at present showing much interest in the a.c. system, due largely to the high cost of the 1,500-volt d.c. electrification from Paris to Dijon which has recently been completed. The elec-

tric service between Paris and Dijon is truly most impressive but the designs used in it are far more elaborate and costly than would be considered necessary in this country for such service. Some French engineers will possibly show a cost advantage in favour of a.c.; but if based on the recent practice in France, it will not be in comparison with first-class modern d.c. practice as it exists here.

- (2) It is quite true that there have been cases of severe telephone interference caused by d.c. railways where wrongly engineered. The point is, however, that such interference is readily avoidable with the d.c. system if properly designed, even with overhead telephone circuits, and I do not believe as much can be said of the a.c. system. The reasons are as stated in my previous letter. With the a.c. system, freedom from interference is obtained only by very costly measures, which in nearly all cases comprise the total cabling or removal of all adjacent telephone circuits.
- (3) I think the report on "Electrification of Railways," 1951, just published by the British Transport Commission, based on its very thorough and authoritative examination of this subject, supports what I have said about the relative merits of the a.c. and d.c. systems in every essential particular.

Yours faithfully,

J. C. READ
Manager, Rectifier
Engineering Department

The British Thomson-Houston Co. Ltd., Rugby

Draft Charges Schemes and B.T.C. Progress

July 28

SIR,—It is, perhaps, true to say that the Transport Act of 1947 is built around the concept of a transport system wholly dominated by the monopoly-structure of rates and charges to which we were accustomed until the road motor challenged the old order effectively, for the whole trend of discussion in the 1930s crystallised in 1939 into the recommendations of the Transport Advisory Council as to a system of charges designed to eliminate price competition. There was much in these recommendations, of course, which made nonsense of the main proposals, but appeasement was satisfied because people with different interests had been induced to sign the same documents, however silly and impracticable.

At that time, I was almost alone in protesting that monopoly charging was practicable only in strict monopoly (there were others but they were silent). The original Transport Bill of 1946 fully recognised this, and the withdrawal of certain clauses changed the character of the Bill so fundamentally as to need a totally different approach to the charges clauses also—indeed, a complete change in them. That never took place, and ever since the Act came into force the British Transport Commission and others have been trying to devise schemes based on the assumptions of monopoly without the reality. It is quite obvious that they are beating the air and getting nowhere. Meanwhile, the financial situation of the Commission gets steadily worse; not merely from the point of view of deficits (which I think should be subsidised for some years) but because of the need for reasonable freedom in expenditure upon rehabilitating and modernising equipment.

What progress there may be in certain directions is quite negligible in relation to reasonable standards. An increase in net ton-miles per engine hour from 450 in 1938 to 578 in 1950 looks marvellous if the efficiency datum is set low enough, but what is it in relation to the U.S.A. achievement of 20,000 net ton-miles a train engine hour? Allow for short-tons; allow for differences in composition of the figures (20,000 really compares with our 1,086 net ton-miles per train engine hour—which becomes about 1,200 in terms of short-tons—except that the 20,000 includes train engine shunting and 1,086 does not); allow for differences in climate, in engine drivers' uniforms, and whatever excuses can be found or invented; then write off the dreadful deterioration in service (which is admitted officially), and is there really any progress at all?

Is it not time the British Transport Commission got

right down to the real business of eliminating the operating wastes due to the wrong use of the railway side of its business and down to the proper use of the road vehicle instead of the train for feeding the heavily-loaded, high-speed trains which represent the true function of the railway? Is it not time to throw aside the complacency which can see progress in a poor improvement on a pitiful achievement? The figure of 450 in 1938 was in fact lower than the figure of 465 of 1937, but the performance in terms of freight train miles per train and total engine hour was better; indeed, the figures for 1938 in these respects were better than in 1950.

It has been my constant claim that a figure of 15,000 net ton-miles per engine hour is easily practicable in this country. That claim was based on careful calculations of my own, and it has never been challenged either in public debate or in writing. It is significant that Sir William Wood has dealt severely with certain critics in his recent paper to the Institute of Transport Congress, without a mention of a single one of my much more drastic charges. I agree with his answers to his critics; they were easy enough to refute in all conscience. He picked on the real "sitters."

Until answered, I am surely entitled to claim that my criticisms and my constructive proposals hold the field. I am not, however, sparring for the glories of debate, but seriously concerned about the transport situation. The national interest calls for an answer; I would like to see it in acts rather than words, but failing acts, words will suffice for the moment.

Yours faithfully,

FREDERICK SMITH

65, Hollowell Road, Northwood

Riding of Electric Express Trains

August 5

SIR,—Your correspondent, Mr. D. M. Sorby's observations in his letter under the above heading, which you published in your June 22 issue, are most interesting and the warning of possible serious accidents given to the Railway Executive is most timely. As an electrical engineer who takes keen interest in railroading, I have just changed my job in the signal department of the Delaware, Lackawanna & Western Railroad for a position in private industry. Thus I am now in a position to "spill the beans" and comment without fear on your correspondent's suggestion that the bogie design may be at the bottom of the atrocious riding qualities of the electric express trains.

I am of the opinion that the nose-suspended electric traction motor is at fault. We have exactly the same trouble on the Lackawanna's electric multiple-unit motor coaches, as soon as a speed of about 40 m.p.h. is exceeded. Until recently, the maintenance of the motor coach bogies was rather good and great care had to be exercised to prevent the formation of excessive lateral play.

As the Lackawanna's diesel-electric passenger locomotives Nos. 800-805 inclusive (three-cab four-wheel bogie units) had a dangerous tendency to nose at high speed, the management watched the tyres of these diesels very carefully, and it was necessary to turn the tyres every 7,500 miles (nine round trips to Buffalo) to prevent rough riding and possible accidents. Recently, after only some three years of service, these passenger diesels were withdrawn altogether from their scheduled runs and new six-wheel two-cab passenger diesels, Nos. 810-818, made their appearance instead. This would prove that the Lackawanna management was thoroughly alerted to the danger of derailment caused by the nosing of four-wheel electric motor bogies with nose-suspended traction motors. These appear to cause high track and wheel stresses due to the low centre of gravity and large unsprung masses.

It is interesting to find a spring-borne electric traction motor design with flexible coupling to its associated wheels, on the latest batch of 100 multiple-unit motor coaches of the New York Central. These have excellent riding qualities and can serve as a model to other railways.

Very truly yours,

PHILIP E. BUCHERT

Pottersville, New Jersey, U.S.A.

THE SCRAP HEAP

Swans' Main Line Route

Two swans and four cygnets arrived at Bridgwater Station the other day. They had walked three-quarters of a mile along the main Bristol to Exeter line, pausing *en route* while several passenger and goods trains roared past. "They did not take any notice of the trains," said a porter, "and walked right up on to the platform."—*From the "Daily Mail."*

The Good Old Days

A correspondent writes that Sir Pelham (Plum) Warner has just published his autobiography "Long Innings," and, in describing conditions in his younger days, says on page 34, "The pound was worth a pound, and railway travelling, clothes, shoes, etc., were 150 per cent. cheaper than today, while taxation . . ."

Our correspondent comments: "The present Birmingham-Euston monthly return is 30s. 6d. Did the dear old L.N.W.R. really pay us 15s. 3d. to make the journey?"

The Whistle that Wouldn't Stop

Even rowdy Cannon Street found it hard on the eardrums. The hurrying stream of passengers leaving the station entrances around 9 a.m. moved much faster. The reason? It was the Whistle that Wouldn't Stop. It happened just outside the station as the 6.29 a.m. from Ramsgate was braking.

The driver tripped the lever to give his usual "toot" of warning, but when he tried to stop the whistle nothing happened. The train came screaming into the station. The whistle blew and blew for 20 min. and the crowd hurried past with fingers to ears.—*From "The Evening News."*

How Moscow Does It

A British railwayman who went to Russia records the hours worked by Russian engine drivers in the current journal of the Associated Society of Locomotive Engineers & Firemen. He writes:—

"They work an eight-hour day, which may be extended to twelve hours if the schedule is such that it cannot be completed in eight hours; six days per week, with a maximum of 208 hours per month. Sunday is at ordinary rate of pay, but if they are called on to work on a recognised general holiday, double time is paid."

There is no mention of reluctance to work lodging turns; the whole working shift is presumably spent at work, and not part of it, in travelling back as passengers to avoid a night away from home. The writer also records that a Russian driver gets 24 days paid holiday a year, with an extra three days after three years of service. At 55, if he has put in 25 years, he can draw a pension of 30 per cent. of his pay, and if his eyesight and health are good he can go on working and earn wages as

well as his pension. The simple lesson that emerges is that if Russian railwaymen enjoy some conditions that seem enviable it is less because of Soviet beneficence than because they put in enough work to earn them.—*From "The Manchester Guardian."*

Private Enterprise Railway

The highly independent Far Tottering & Oyster Creek Railway issued its returns on August 9. Up to now this railway has resisted nationalisation as successfully as it has clung to the traditions established by Mr. Stephenson's *Rocket*. Its figures show that at the Festival Gardens there is none of the customer-resistance to railway travel which the nationalised British Railways blame for the constant fall in passenger takings.

In 13 weeks, with a Sunday service, the F.T. & O.C.R. 500-yd. system had carried 724,082 passengers. Three trains leave at intervals of 2½ min. during the peak hours of travel.—*From the "Daily Telegraph."*

It's Always Trains

They asked a 13-year-old boy from Holloway at a North London court what Peterborough has got that Kings Cross has not. "The train numbers are far better there," he replied. That was why one Saturday he took £2 from home and went to Peterborough. But he returned to Kings Cross to sleep in the waiting room. Sunday he spent train-spotting at Victoria, Liverpool Street, Fenchurch Street, Paddington, and Euston.

Back to Kings Cross for the night and then on Monday to Grantham. But he lost his ticket and the police sent him home. When told that the boy had been on probation in 1949 for "always running around" the chairman asked: "Was it trains then?"

The boy replied, "It's always trains."—*From the "Evening Standard."*

Trains Start a Fashion

It is probably a record for a railway to have set a fashion in ladies' wear. This happened recently in the U.S.A., however, resulting from a colour originating in the shops of a coach-building firm, and which was incorporated in the decoration of coaches of the new "Sunset Limited" trains of the Southern Pacific Company between Los Angeles and New Orleans. It is not that the railway was innocent of any complicity in this; the whole scheme was clever publicity for the new trains. It began with the S.P. publicity staff, acting in conjunction with the builders, who invited representatives of a well-known American magazine to a preview of some of the new coaches.

The colour dominating the lounge car, which the builders described as "Watermelon Red," attracted the attention of the visitors, who renamed it "Sunset Pink"; later it was comple-

mented with slight variations of the shade "Mountain Pink," "Desert Pink," and "Valley Pink," corresponding with the scenery passed through on the route. Leading clothing manufacturers took up the colours with enthusiasm, working them into all manner of feminine requisites, not merely clothes, shoes, and gloves, but even lipsticks and ear-rings. Fashion parades were organised in the "Sunset Limited" trains and in the principal cities they serve; famous stores organised window displays of "Sunset Pink" adorned by posters supplied by the Southern Pacific.

Picture of a Station Master

When that I was a little tiny boy, I used to love to go down to the Midland Road Station at Bedford to see the trains come and go, and gaze in half-frightened fascination at the expresses hurtling through at a mile a minute (for this was before they built the "loop" outside).

It was usually necessary to dodge the station foreman, who looked as though he regarded little boys as less than lost property or perishable goods. But occasionally there emerged from his sanctum a personage clothed with Olympian dignity, for all that he was a small man. His eye ranged over his domain keenly, but not unkindly.

Here was Authority, but in benignant guise. Little boys who behaved themselves discretely had no reason to be afraid of such a presence. It was the Station Master.—*From the "Bedfordshire Times & Independent."*

The Pride of the Forest

("The Royal Wessex"—*Festival Express, Waterloo to Bournemouth*)
There's a distant murmur from Totton way,

The "Wessex" is up to time again;
There's a wisp of smoke over Lyndhurst Road

And the metals brace to the mighty strain;

The summer's day is in full retreat
And a red sun flushes the western sky,
As, with a burst, through Brockenhurst,
The "Pride of the Forest" thunders by,
Hurling through Hinton Admiral,
Gliding swiftly through little Sway,
Out with a roar across the moor,
Echoing in homesteads far away;
On, on to the shining sea,
Through heather and bracken and cool,
green trees,

As if the homing wheels could sense
The salty tang of the Channel breeze.

The wild things quake in bush and brake,

A fleeting terror fires each eye,
But the forest folk smile happily
As the stately train goes flashing by,
For she speaks to them of a day's work done,

A truce to excursions and alarms,
A time for rest, a time for play
And a quiet pint at the "Forest Arms."

A.B.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Railway Pensioners

As a result of the Government's decision to increase the temporary allowance, payable to state pensioners, by 50 per cent. from April, 1951, the maximum annual allowance payable to European married railway pensioners has been raised from £60 to £90, and the means limit from £600 to £630 a year. It is estimated that the payment of the increased allowance will cost the Railway Administration an additional expenditure of at least £250,000 a year. Many railway pensioners who were previously not entitled to the old-age pension will now become eligible for this pension, in addition to their railway pensions, with the raising of the means test from £96 to £180 per annum. The allowances vary according to whether the pensioner is living in an urban area, or in the country, where the cost of living is considered to be lower.

The Railways & Harbours Acts Amendment Act, passed during the 1951 session, also makes provision for pensions for widows of railwaymen. The new scheme aims at improving the basis on which benefits in the form of lump-sum payments to dependants are calculated, and makes such amounts available for conversion into an annuity for the benefit of the widow or, if the deceased servant or pensioner does not leave a widow, provides for payment of such improved lump-sum benefits to other prescribed dependants.

The improved benefits will involve an increase in the rates of contribution paid by the staff. This has been determined at three-quarters per cent. on substantive pay in addition to existing pension contributions. The Administration's share will amount to about £170,000 per annum.

CANADA

Freight Traffic

Revenue freight carried by Canadian railways in March totalled 12,552,650 tons, a gain of 6.6 per cent. over last year's corresponding figure of 11,777,322 tons. Loadings at Canadian stations amounted to 9,144,285 tons against 8,829,501 a year earlier. In the first three months of this year, loadings reached a near record of 36,028,402 tons, an increase of 4,782,166 tons, or 15.3 per cent., over the similar period of 1950. Loadings at Canadian stations rose 3,175,169 tons to 26,762,547.

C.N.R. Results

Operating revenues for the Canadian National System for June, 1951, amounted to \$52,924,000. Operating expenses were \$47,892,000. The net operating revenue was \$5,032,000. In June, 1950, revenues were \$47,770,000; expenses \$41,217,000 and the net operating revenue \$6,553,000.

For the first six months of the year, operating revenues aggregated \$299,259,000, compared with \$255,953,000 in the same period of last year, an increase of \$43,306,000. Operating expenses amounted to \$279,511,000, against \$239,459,000; net revenue for the period amounted to \$19,748,000, compared with \$16,494,000 a year ago.

UNITED STATES

Iron-Ore Pier at Philadelphia

The Pennsylvania Railroad will begin work before the end of the year on an iron-ore unloading pier on the Delaware River at Philadelphia. Contracts have been awarded for the unloading machinery. Mr. Walter S. Franklin, President of the Pennsylvania Railroad, said that the pier, with its ancillary equipment, tracks, and yard will be one of the largest tidewater ore unloading facilities in the country, with a rated capacity of 2,400 tons an hour. It will cost \$8,000,000 and is due to be completed in the summer of 1953. Imported ore will then be unloaded from the largest ocean vessels to wagons for movement to the steel mills.

The pier will be constructed initially to unload two ships at once, with provision to expand capacity ultimately to handle four ships simultaneously. "New sources of iron ore are being developed in Venezuela, Brazil, Chile, Liberia, and Labrador by and for the steel industry in this country," Mr. Franklin said, "and it is certain that ore imports will increase steadily, under the impetus of the defence programme, as the new sources come into production." The company's present ship-to-

rail unloading facilities in Philadelphia, at Girard Point, were inadequate for the expected flow, he continued. By building into the pier provision for doubling its capacity on short notice, they would be able to meet every need that might arise.

Equipment of P.R.R. Pier

The pier structure will be built of concrete at a cost of \$1,800,000 and will extend 850 ft. into the Delaware. It will have two electric unloading cranes, costing \$1,700,000, which will use buckets of 17 tons capacity to unload ore from ships moored on each side of the pier. The buckets will drop the mineral directly on to moving belts 54 in. wide and extending 1,600 ft. along the pier and ashore to a 500-ton capacity elevated hopper. Empty wagons will be pushed under the hopper on two tracks for loading by gravity flow, and then will be shunted to a new classification yard to be made up into trains for direct movement to the mills.

Mr. Franklin pointed out that siting the ore pier adjacent to the present coal dumper provides an ideally efficient operation. Hopper wagons arriving at the coal dumper loaded with fuel for barge delivery or shipment by sea, now return to the mines empty; when the ore pier is completed the empty wagons will be shunted directly from the coal dumper and reloaded with ore for movement to the steel producing areas, which generally are near the coal mines. Thus, wagons will haul coal in one direction and ore in the other.

The project involves expenditure of about \$3,000,000 for the moving belts and hopper, and supporting shops, machines, tools and power facilities. Track rearrangement in the pier area

Modern Station Building in Egypt



The new station at Sidi Gaber, Alexandria, on the Cairo-Alexandria main line of the Egyptian State Railways

will cost about \$1,000,000 and dredging the river to admit deep-draught vessels to the new pier, some \$500,000.

WESTERN GERMANY

Closing of Private Railways Feared

The federation of private railways, Verband Deutscher Nichtbundes eigener Eisenbahnen (VDNE), comprising 235 railway undertakings totalling some 3,726 miles, recently stated that the capital owned by its members amounted to DM. 350,000,000; it was added that they employed 24,310 people, and in 1950 conveyed 212,000,000 passengers and 62,000,000 tonnes of goods.

A total of 150 of them had working losses in 1950. The precarious financial position of some points to the likelihood of a number closing unless outside financial assistance is obtained. One is the Kleinbahn Lingen-Berge-Quakenbrück, a narrow-gauge line, 34½ miles long, in the region bordering on the Dutch frontier between Münster in the south and Emden in the north.

War damage suffered by the member railways has been put at DM. 65,000,000; renewals expenditure in arrears amounts to DM. 81,000,000, based on the 1949 price level. Against this, funds available included DM.

6,900,000 from E.R.P. sources, and about DM. 5,000,000 from credits granted by the Federal and by the provincial governments. To combat road competition would mean wholesale dieselisation. In view of present-day prices of diesel rolling stock this would entail raising loans, an extremely complicated financial venture at present.

Hohenlimburger Kleinbahn (south of Hagen in the Ruhr) recorded railway receipts of DM. 284,733 for the first year with Deutsche Mark accounts (June 21, 1948 to the end of 1949), in addition to bus receipts of DM. 1,813. The accounts closed with a working loss of DM. 60,878. Süddeutsche Eisenbahn-Gesellschaft, in the Ruhr, which also operates tram and bus services in Essen and surroundings, conveyed 6,300,000 passengers on its railways during the first year after the currency reform. Railway and tram receipts amounted to DM. 32,620,000, and bus receipts to DM. 2,740,000; the working loss was DM. 730,000.

Württembergische Eisenbahn-Gesellschaft und Württembergische Nebenbahnen AG., both under the same management, operate ten light railways and road services in Württemberg and Baden. They have stated that they can pay no dividend and that their future is problematic.

Publications Received

Directory of Railway Officials & Year Book, 1951-52. London: Tothill Press Limited, 33, Tothill Street, Westminster, S.W.1. 8½ in. × 5½ in. 626 pp. Price 40s.—The principal rearrangement in the present volume is the second stage in changing the method of presentation of the various units of British nationalised transport. There has been further adjustment to group all units of the British Transport Commission. Previously, the British section was divided into railways, road transport, and so on, regardless of ownership, but plans for eventual integrated national transport make the present method of grouping B.T.C. undertakings more useful. Revised maps have been prepared for the Road Haulage Executive and the Docks & Inland Waterways Executive. Undertakings retaining their company structure are placed after the B.T.C. entries and show the financial interest of the B.T.C. therein.

There has been official revision of entries for some foreign countries from which details have not been received for many years. These include Japan and the U.S.S.R., and some "Iron Curtain" countries in Europe. A new entry is that for Saudi-Arabia.

The order of the statistical and year book information has been rearranged, so as to secure a more logical sequence. Additions include a new loading diagram for British main-line passenger rolling stock, and details of right-and left-hand running throughout the world. A new feature is a review of

train accidents in Great Britain in 1949. The railway bibliography has been pruned, and now comprises only current works published in recent years, or standard historical works.

No Ministry of Transport Statistical Returns of Railways in Great Britain have been issued since those relating to the year 1947, but the B.T.C. has revised specially for this volume the similar table of selected statistics, covering British Railways, that was introduced last year. As in previous issues, a mass of up-to-date detailed information is included in the small compass of this comprehensive work.

British Standards 1951 Year Book.—The new edition of this reference work has just been published. Well over half of its 400 pages are devoted to a list of the 1,700 British Standards current at December 31, 1950, with a brief description of the subject matter and scope of each. A complete subject index simplifies reference and in addition, a supplement listing the British Standards issued between January 1 and March 31 this year is included. Copies may be obtained from the British Standards Institution, Sales Department, 24, Victoria Street, London, S.W.1, Price 7s. 6d.

High-Nickel Alloys for Heat-Resisting.—The properties of nickel and its alloys with chromium and iron are well known. These alloys not only resist progressive oxidation, but also possess good mechanical properties at high temperatures, so that failure of heat-treating equipment due to sagging, distort-

tion, and so on, is lessened, and the need for large heavy structures is reduced. Furthermore the range of materials now available will meet a wide variety of operating conditions. This new publication issued by Henry Wiggin & Co. Ltd., discusses the high temperature properties of Nimonic 75, Inconel, Nimonic D, Mangonic, and pure wrought nickel, and by quoting actual uses it gives guidance to the most economical choice of material for a given set of conditions of temperature, loading, and requisite life.

Associated Lead Products.—Much useful information is contained in a new illustrated booklet issued by the Associated Lead Manufacturers Limited. The booklet contains an abridged history of the formation of the company and gives a list of area offices in this country. The products dealt with include white lead, lead oxides, lead sheet and pipes, lead paints, alloys, and so on.

Aluminium Development Association.—The directory of members of the Aluminium Development Association for 1951 gives the names of the council, with a brief statement of the constitution and objects of the A.D.A., and the names, addresses, and other particulars of its member companies, including associate or subsidiary companies. A short description is given of the activities and products of the company in each case. By means of an index of products classified under aluminium and aluminium alloys readers are referred to member companies producing any particular product.

IRELAND

Extension of Container Service

In the overseas columns of our July 13 issue we reported that Coras Iompair Eireann was to manufacture 50 containers. Mr. G. B. Howden, general manager of C.I.E., has now made a statement on container working, which implies a considerable extension of the use of containers in Ireland. A committee has been set up to consider development most suited to the particular requirements of Ireland, where low density, especially sundries, traffic prevails.

C.I.E. Rates Increased

C.I.E. rates and fares are to be increased from September 10. Provincial bus fares and single rail fares will rise by 14½ per cent. return rail fare by 12½ per cent., and merchandise by 16½ per cent. Dublin bus fares, cartage rates, and other charges are to be revised.

An announcement by C.I.E. states that its labour costs have gone up by over £600,000 a year. Increases in the price of stores, materials and fuel will cost a further £600,000 a year. In the circumstances there is no alternative to raising rates and fares.

Continuously-Welded Rails

Seven years of progress in welding track on a busy American belt line

BY the end of 1951 the Elgin Joliet & Eastern Railroad, a belt line to the north and west of Chicago which connects with all the principal railways out of that city and conveys a very heavy freight traffic, will have 90 miles of continuously-welded rail in its main lines. Welding began in 1943 with 5½ miles, and has continued every year since, except 1945 and 1946, until the total reached 68½ miles by the end of 1950; a further 22 miles is being welded during 1951.

In 1943 the cost of welding averaged \$9.70 per joint; in 1950, notwithstanding the introduction of the 40-hr. week and the great rise in the cost of labour and materials, the cost was no higher than \$10.95 a joint; moreover, this includes a debit of \$1 to each joint to cover the cost of the central welding plant established in 1947, which will be charged off in this way over a period of three years. The total cost of laying welded rail is about \$1,000 a mile more than that of laying rail with conventional fishplate joints.

When welding was begun, a welding plant had to be set up in the vicinity of each stretch of line about to be relaid, and the rails were skidded to the site, but considerably more efficient means of transport have been brought into use since the building of the central welding plant. The railway now has equipped 43 bogie flat wagons with rollers, and the complete train is able to transport twelve welded rails in 1,600 ft. lengths. The wagons were old vehicles scheduled for scrapping, but adapted for this special use. On each wagon the drawgear was blocked to reduce the slack as much as possible. Special clamps are provided on the middle wagon to hold the rails in position, and the rollers on each wagon permit the outer ends of the rails to move as necessary when the rail train passes round curves.

Central Welding Plant

The central welding plant is manned by the railway company's rail welding gangs, who are occupied on other types of welding work during periods of the year when the rail-welding plant is not in operation. Normally, the welding of rails, which is by the Oxweld process, begins in April, and the laying-in of the welded rail in June. Standard 39-ft. rails are welded into 1,600 ft. lengths, and as the welding crews have gained experience, the speed of welding has been stepped up to 45 welds in each 8-hr. day.

The 43-wagon rail train can carry the product of about two weeks' work at the welding plant, and the rails are run to site on Saturdays and Sundays, when the traffic is lightest. If they are to be laid in single-track territory, where absolute possession of the line is obtainable for short periods only, the

length of each rail is reduced from 1,600 to 820 ft. (21 rails 39 ft. long), and the welding into longer lengths is done on site. On site, the welded rails are unloaded by anchoring them at one end and moving the rail train from under them. It has been found by experience that distribution on site of the welded rails is a quicker and more economical process than that of ordinary 39 ft. rails.

Conventional methods are used for laying the 1,600-ft. rails, and no extra spiking has been found necessary to withstand the tendency to buckle with changes of temperature. Actually, expansion has given no trouble whatsoever, notwithstanding the fact that on site the 1,600 ft. rails have been welded together into continuous lengths broken only by switch and crossing work and insulated joints in connection with track-circuiting.

The Elgin Joliet & Eastern now possesses a single rail 19,812 ft. long—probably the longest in the world. Where 1,600 ft. lengths are welded together, the joints so made have been protected by welding fishplates to them, and until now no field-welded joint has failed. In the laying, gangs of 50 men are used, and it is found that they can lay as great a length of welded track in a day as of bolted rail, and with fewer machines, as no fishbolt tightening is required.

Importance of Anchorage

With continuous rails adequate anchorage is a matter of great importance. On single track, anchors are applied to the rail at every sleeper for 240 ft. at each end of a welded section; on double track, anchors are applied at each sleeper for 320 ft. from the running-on end and for 160 ft. at the running-off end of each welded section. In every 3,000 ft. length of rail, therefore, the rail is solidly anchored over a group of 150 sleepers.

Where the continuously-welded rail is fishbolted to ordinary bolted track, the latter also is solidly anchored for at least two rail lengths from the joint concerned. If the welded section has to be broken for track circuit purposes, a short length of ordinary rail is inserted between the welded rail and the insulated joint, which facilitates the removal, when necessary, of the insulated fishplates.

To offset the increased cost of laying welded as compared with bolted rail, important savings are being effected. The first is in general track surfacing work. The initial 5½ miles of E. J. & E. welded track, laid in 1943, will not require general surfacing for another two or three years yet, though it carries 20,000,000 gross tons of traffic annually; in the normal course it would need general surfacing every seven years, and joint surfacing, now no

longer needed, at much shorter intervals.

Track work is also simplified by there being no fishbolts to be tightened periodically; neither is there any need to bond the rails in connection with track circuits. It is expected that rail life will be increased because of the elimination of batter at the rail-joints. Sleeper life also is being increased, because the sleepers adjacent to welds no longer suffer from the pounding action that occurs in the vicinity of bolted rail-joints.

Fewer Minor Track Repairs

It is difficult to make any precise comparison of track costs on the Elgin Joliet & Eastern, as between past and present, seeing that the welded rail now being laid in, of 131 and 132 lb. per yd. section, is heavier than the rail that is being replaced. However, minor track repairs have been reduced to the extent of from 50 to 75 per cent., and the initial maintenance of the welded track has not only been lower than the initial maintenance of relaid ordinary track, but shows definite signs of continuing lower.

Of 17,829 depot welds in E. J. & E. tracks, up to March, 1951, no more than five had failed, and the failures in all cases were traced to faulty welds; each occurred shortly after the track had been laid in, and in no case in extreme temperature conditions. With its present experience, the company has decided that there need be no limit to the permissible length of continuously-welded rail other than that set by switch and crossing installations, and the insulated joints required in connection with track circuit.

With the completion of the 1951 programme, the Elgin, Joliet & Eastern will have replaced almost the whole of its rails in its heavily-trafficked main lines with controlled-cooled rail of heavy section, in either welded or bolted track, none of it more than 14 years old. No further welded rail installation is then contemplated until the bolted track installed before the first welded rail-laying in 1943 requires renewal, when welded rail will be laid in. The ultimate aim is to have continuously-welded rail throughout the entire system. We are indebted to our American contemporary *Modern Railroads* for the foregoing particulars.

ROAD CASUALTIES IN JUNE.—The total number of road casualties in June was 19,749, a decrease of 182 compared with June, 1950, the first complete month of unrationed petrol. Deaths numbered 405, seriously injured 4,729, and slightly injured 14,615, compared with 448, 4,757, and 14,726, respectively, in the corresponding month of 1950. The slight improvement in total casualties was entirely during hours of daylight.

Advantages of Top Feed Delivery

An arrangement to prevent the entrance of cold feed water into a locomotive boiler

By E. C. Poultney, O.B.E., M.I.Loco.E.

WHEN a paper on the development of the injector as used for locomotives was read by Mr. T. H. Shields recently to the Institution of Locomotive Engineers* mention was made of the methods adopted for feeding the water into the boiler. Insofar as practice in this country is concerned, feeding the water through the steam space was introduced on the former G.W.R., following a suggestion by Mr. Vaughan Pendred, then editor of *The Engineer*, when Mr. G. J. Churchward read his paper on "Large Locomotive Boilers"

it was thought it was not so necessary in cases where the feed was adequately treated.

In general, it would seem that the effect of top feed on the tubes was mainly considered, no mention being made of any possible effect it might have on firebox plates. This may be due to the material used, which in British practice is copper as against steel in general use elsewhere. After 1932, the former L.M.S.R. fitted top feed as standard, and it is understood that boilers have been particularly trouble-

firebox side-plates have been a major item in boiler maintenance for many years, and has been the subject of research; further, the experience of the New York Central has not been materially different from that of other railways in the United States. The report points out that it has been found necessary to renew firebox side-plates at each shopping period, and a considerable number of boilers have had to receive firebox repairs in the form of patches at the sides at intermediate periods between shoppings.

Reference was more particularly made to certain troubles experienced with—at that time—comparatively new 4-8-2 type locomotives. Most of these were designed for combined passenger and freight services. These engines were placed in traffic between 1940 and 1944 and are of the same general design except that some have 69 in. and 72 in. dia. driving wheels. The boilers are of the same size and type, being of the conical radially-stayed pattern, with combustion chambers 63 in. long.

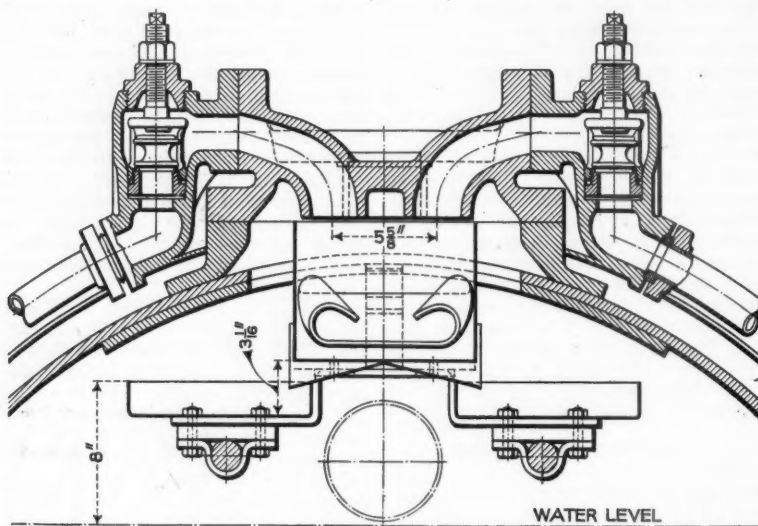
Both the firebox and the combustion chamber are of welded construction throughout. The width of the water space at the foundation ring is 5 in. at the back and sides and 5½ in. at the throat. There are five arch tubes of 3 in. outside dia. and the maximum spacing of the stay bolts is 4 in. by 4 in. Flexible staybolts are largely used for the sides and crown of the firebox and for the combustion chamber. Working pressure is 250 lb. per sq. in.

These particular 4-8-2 locomotives have Worthington open type feed-water heaters, type S.A., with a rotary cold-water pump delivering water to the heater mounted in the smokebox in front of the chimney, and a reciprocating hot water pump drawing the hot feed from the heater and delivering it to the boiler. Other N.Y.C. locomotives have this type of heater and others have the Elesco closed type. The firebox material is a standard carbon steel for internal fireboxes and combustion chambers.

Experiences with 4-8-2 Engines

Referring to the firebox performance experienced with the 4-8-2 type locomotives it is reported that one engine of this class developed wavy side-plates and leaking staybolts after accumulating about 28,000 miles. Several others required patches well under 100,000 miles of running and practically all required new firebox sides at about 120,000 miles.

Metallurgical examinations of many sections of the defective plates usually revealed the same results, namely, that the failure was due to fatigue cracks, particularly in the region of the fire; or, in other words, in the lower part of the firebox. To try to arrive at the causes



Boiler top feed arrangement, former G.W.R.

before the Institution of Mechanical Engineers in 1906.

From that time the use of a top feed in one form or another, though not universal, was practised to some extent by several British railways, and has become commonly used elsewhere. In passing, it may be remarked that the top feed method of supplying water to the boiler has now been adopted as standard by British Railways.

The remarks made during the discussion of the paper read to the Institution of Locomotive Engineers indicate that the advantages of a top feed lay principally in the suppression of the pitting of the boiler tubes. On the other hand the opinion was also expressed that the question of top feed depended largely on whether the feed water was chemically treated.

It was stated that there was no doubt that top feed reduced pitting and general corrosion when feed waters were not fully treated with alkali and tannin, but

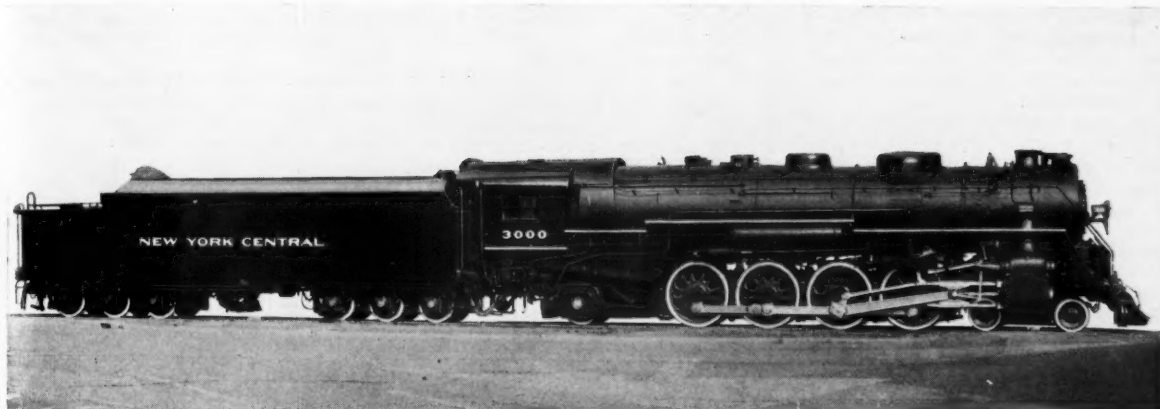
free, which has been attributed to improved construction and design, particularly by the use of generous radii in the flanged firebox plates and in the material used for the stays fitted in the water spaces.

With regard to steel inner fireboxes and the effect of fitting a top feed for the boiler feed supply, it is of interest to refer to a report on this subject read by Mr. K. D. Relyea at the annual meeting of the Master Boiler Makers' Association, held at Chicago in the latter part of 1949, which gave some valuable information concerning investigations made by the New York Central System.

These experimental investigations were carried out with the idea of ascertaining the cause of failures experienced with steel fireboxes, due more particularly to fatigue stresses set up in the plates forming the sides of the firebox. When considering the remarks made it would be as well to point out that about 95 per cent. of the boiler feed water used was chemically treated.

The report commences with the statement that the patching and renewal of

* The Gifford Centenary—"A Survey of Locomotive Injector Development." By T. H. Shields. Institution of Locomotive Engineers, October, 1950



New York Central locomotive with 69-in. dia. coupled wheels built by the American Locomotive Company

leading to these failures certain steps were taken. The original inspection reports and analysis of the steel were examined, together with feed-water treatment and boiler washout practices, while the method of making the staybolt holes in the plates and cylinder and feed-water pump lubrication practices were also considered, all in an effort to determine the cause of these troubles.

Courses of Action

The following courses of action were ultimately decided on:—

(1) The reduction in the amount of oil entering the boiler with the feed from the feed-water heater, which was accomplished by a strict regulation of the mechanical lubricators for the main cylinders and valves, and the removal of the feed-water exhaust steam from the heater to the atmosphere; this was carried out in the case of five engines.

(2) A trial application of alloy-steel firebox side plates.

(3) A trial application of a top feed in conjunction with a spray nozzle.

It was felt that these three approaches to the problem would provide an answer as to whether it was oil deposits in the boiler, firebox steel, or cold feed-water supply to the boiler. The reduction of oil in the feed gave indication of improvement, but did not prove to be the

answer, because patching still continued. The application of alloy steel plates was made to alternate sides of the fireboxes of ten locomotives, the opposite sides in each instance being of standard carbon steel. Four applications were made of manganese-vanadium steel plates, three of carbon-molybdenum steel and three of nickel-chromium steel.

Three of the ten engines also had a top feed, fitted with spray nozzles, so as to obtain comparison with the usual feed connection at the side of the boiler barrel. The result of these experimental applications is interesting, because, at the time of making this report, in September, 1949, the three locomotives having the top feed arrangement were still in service, while the other seven with alloy-steel plates and the companion standard carbon-steel plates had all plates removed on account of cracks at the staybolts.

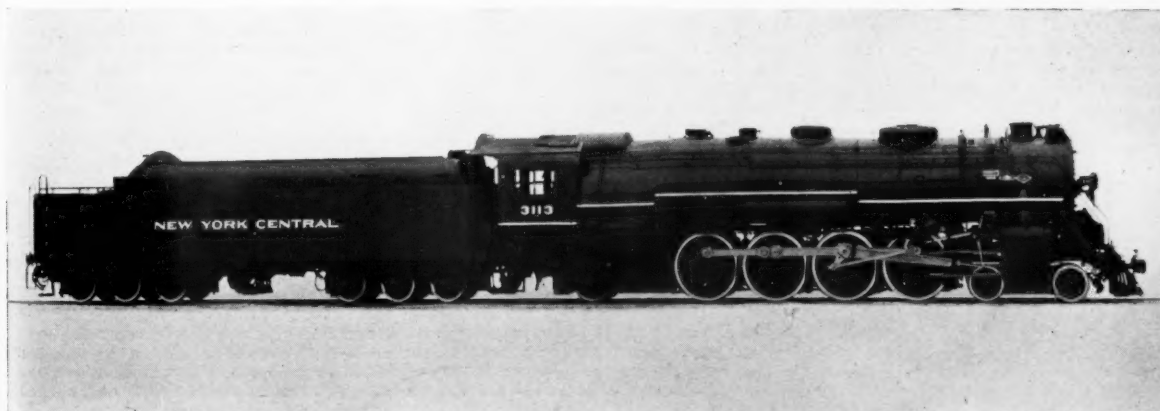
An examination of these side-plates again indicated failure due to fatigue although the steel was of good quality. The minimum and maximum mileages made by the steel plates without top feed were 83,000 and 155,000 miles respectively, while the engines with the top feed had made some 250,000 miles with all plates in excellent condition and no noticeable difference in performance of alloy or standard steels.

The specific object of the top feed installation was to positively prevent the entrance of cold feed-water into the boiler at all times. Cold feed-water will fall to the bottom of the boiler and circulate along the hot sides of the firebox and it is suggested that there probably exists as much as 200° F. difference in the temperature between the top and bottom of the side-plates. This condition it is maintained causes continual changes in stress and leads directly to fatigue.

Consideration of this condition prompted a further development in the top feed method of introducing the feed water as compared with the former side-feed system.

A top feed fitting was, therefore, evolved, embracing a check valve and a special nozzle, designed by the Worthington Pump & Machinery Corporation, N.J. The top feed fittings are mounted on the front part of the boiler barrel on the centre line, and when so applied a deflector tray is clamped on the internal main steam pipe below the nozzle to prevent the incoming feed from impinging on the pipe.

The ends of the tray are of sufficient height to prevent the spray of water which passes fan-like from the nozzle from touching the steam pipe, and for the same reason the end of the nozzle is



New York Central locomotive with 72-in. dia. coupled wheels built by the Lima Locomotive Works Incorporated

arranged about 3 in. from the bottom of the protecting tray. The feed is, therefore, sprayed into the steam space, and spills out of the tray on each side into the boiler water.

Washout plugs, one on each side, are fitted in the barrel for washing the tray and the end of the spray nozzle. The nozzle is made of solid-drawn steel tube $2\frac{1}{2}$ in. diameter inside, and spraying action is attained by welding into the bore of the tube a stem with a cross-piece which has a $2\frac{1}{2}$ in. diameter disc welded on. When fixed in position, the disc provides an annular opening $\frac{7}{8}$ in. wide, which, in conjunction with the coned form of the upper surface of the disc, diffuses the water in a fan-like spray into the tray.

Improved Performance

The first application of the top feed arrangement described was made to an engine undergoing repairs at the West Albany Shops, N.Y. This engine had been built in 1942 and had run 138,000 miles before shopping. New side-plates were put in the firebox of standard carbon steel and the top feed fitting applied. The locomotive was shopped again in June, 1945, and May, 1947, the only repairs to the firebox being a few staybolt renewals.

It was shopped again in June, 1949, when it was found necessary to apply quarter side-plates to each side of the firebox. The total mileage was 485,416. Several later applications are fast approaching this record. To indicate the standard of performance before the use of the top feed apparatus, it is stated that 4-8-2 type engine No. 3034, built new in January, 1941, had until January, 1947, run 366,000 miles, and during this time had received three lots of new side-plates, and the firebox sides were in addition repaired by patching five times. Since the application of top feed this engine has accumulated 112,000 and has had no firebox repairs of any kind.

An analysis of the boiler history of 65 locomotives shows a great improvement in firebox maintenance since the introduction of top feed apparatus. Of these boilers nine received repairs to the firebox side-plates at the first shopping

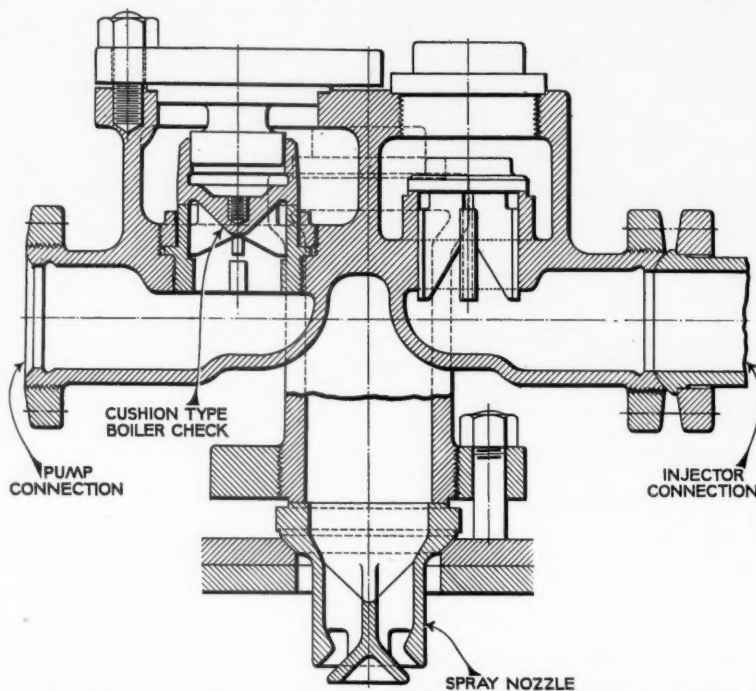
period after running 140,000 miles. Six of these repairs were found to be caused by faulty washout practices.

Thirty-one of these 65 engines have been through one shopping period and five through two shopping periods, without any side-plate repairs, and two engines have exceeded 400,000; four, 300,000; 21, 200,000, and 28 100,000

evaporation to compensate for the heat given up by the steam to the boiler feed water.

The advantage of decreased firebox repairs justifies the application of a top feed and combined spray nozzle to all classes of steam locomotives subject to repeated failure of firebox side-plates.

It would seem from this report that a



Worthington standard top boiler check fitted with cushion type valve and boiler check spray nozzle

miles without side-plate repairs. Experience indicates that a large steam space is best adapted to top feed for the most satisfactory results. In certain instances water carry-over has taken place, usually when steam space has been relatively small. It is considered that the application of a top feed makes it necessary for an engine to increase its rate of

top feed materially assists in firebox maintenance when steel is the material used. Further, because water circulation will be the same in any locomotive boiler, being independent of the materials used in construction, the question may well be asked as to whether a top feed favourably affects copper internal fireboxes.

REOPENING OF PALESTINE LINE.—The old Hedjaz narrow-gauge line connecting Palestine with Syria has been reopened for goods traffic between Haifa and Afula in the Iszdraelon Plain, according to an agency report.

ELECTRICAL EQUIPMENT TO BE EXHIBITED.—The British Thomson-Houston Co. Ltd. will be exhibiting on two stands at the Engineering, Marine & Welding Exhibition this month. The exhibits will be representative of B.T.H. practice in electrical propulsion equipments, radar, and electric plant for dockyards and general industrial use. The exhibits will cover, among other things, developments in gas turbines, high breaking capacity switchgear for marine work, and electric speed indicators and magnetos. The industrial equipment will incorporate electric motors, including a new range of totally-enclosed fan-cooled

machines of standardised dimensions, and electric control gear. There will be demonstrations of Stacrecp crane control. Mazda lamps and lighting equipment will be another feature, as well as control panels for spot and seam welding machines.

CARBON STEEL TO BE CONTROLLED.—The Ministry of Supply has announced that control of distribution of the main forms of carbon steel will be introduced on December 3. The present arrangements for controlling distribution of sheet steel, tinplate, terneplate, and blackplate are to remain unaltered. A further announcement will be made about control of distribution of alloy steel. The new arrangements, the statements add, will be similar to those in operation up to May, 1950, but they do not apply to building and civil engineering firms, which will receive in-

structions from the Ministry of Works how to apply for the steel they need. Details of exemptions for small quantities of carbon steel will be issued later.

LANSING BAGNALL POWER JACK TRUCK.—A new type, the Lansing Bagnall Power Jack Truck, has been designed for the London Transport Executive Board for use at Aldenham Works in movement of bus chassis and complete buses from one assembly line to another. It consists of a standard Lansing Bagnall Power Truck with a special low jack unit fitted to the load axle. The jack is passed under the front axle of the bus and raises the axle and wheels several in. off the ground; the truck is then operated to manoeuvre the bus in any desired position. The buses lifted weigh about $7\frac{1}{2}$ tons, and the load actually lifted by the power jack is approximately three tons.

Post-War Engineering on the Netherlands Railways

Extension of electrification to all main lines and replacement of numerous damaged or destroyed bridges



Interior of new loading shed at Breda

FINANCIAL considerations and other urgent rebuilding schemes, such as housing and industrialisation have slowed the completion of the post-war planning programme of the Netherlands Railways. In his paper to the Permanent Way Institution, on the occasion of the annual summer meeting on May 18, Mr. J. L. A. Cuperus, Chief of Way & Works, Netherlands Railways, stated that the damage done to the Netherlands Railways was mainly the outcome of the strike of railwaymen begun in September, 1944, at the command of the Netherlands Government in London, when the Germans retaliated by wrecking the entire railway system.

After the war, as there was an acute shortage of motive power, a virtue was made of necessity and it was decided to extend electrification to all main lines. It was estimated that electric traction was economical for lines with a traffic density of more than one five- or six-coach train an hour. As most goods trains run at night, they can be hauled by the locomotives which haul passenger trains by day.

Many main lines had been reduced to single track, others had been torn up, and some of the largest yards had been dismantled. Of a total route mileage of over 2,000, only 700 miles were serviceable at the time of Liberation. Almost all are in use again, though about 100 miles of main line still await restoration of the second track.

The system is divided into three main permanent way classifications: (1) 125 lb. and 94 lb. per yd. rail, with cast-iron chair fixed to the sleeper by four coach screws and to which the rail is attached by clips and bolts; (2) 94 lb. rail with a fastening of the French "Est"

type, in which a pressed poplar pad is interposed between the rail and hardwood sleeper; and (3) 77 lb. rail with the same fastening as for (2).

As stone ballast is costly and must be imported, it is used on only lines needing special care. Elsewhere, gravel is used, necessitating rigid track construction. On new or reconstructed track

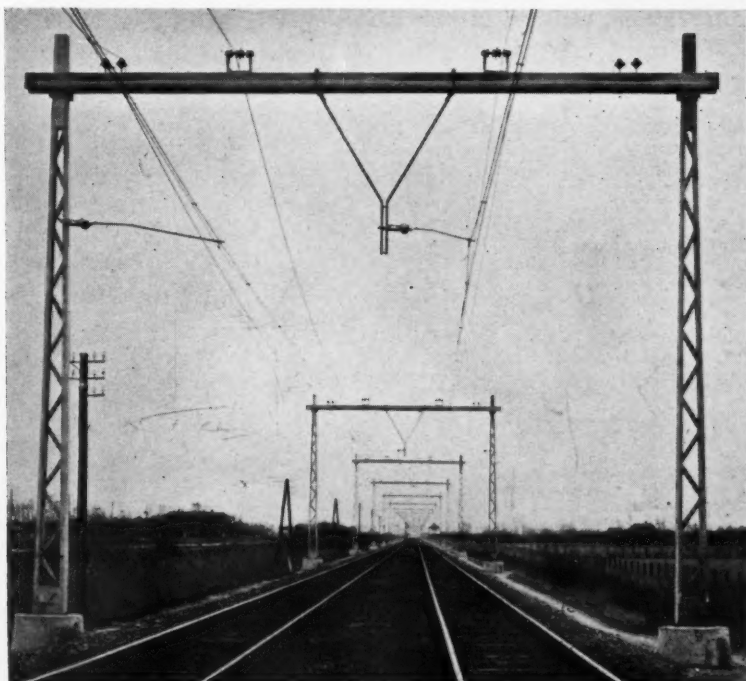
beds the distance between track centres is widened to 13 ft.; the new ballast rests on a foundation of compressed old ballast.

Electric overhead structures are the responsibility of the Civil Engineer. The first electrification was carried out with steel standards. A separate suspension for up and down lines was chosen, so that damage to one line did not affect the other. This principle was abandoned later when it was found that damage rarely occurred, and steel gantries covering both tracks were installed, saving much steel and concrete.

Types of Overhead Structure

Experiments with reinforced concrete gantries were made before the war, and portals in the form of a triple articulation arch consisting of vibrated reinforced concrete were first used between Utrecht and Hilversum. For the new electrification in Brabant in 1949 hollow centrifuged piles were used, carrying arched cross-beams of reinforced concrete with straight tie-rods.

Pre-stressed concrete portals, similar to the French Weinberg system, used largely on the Paris-Dijon electrification, are being used for the electrification of the lines in the east and north of the Netherlands; they differ from the French examples in having diagonal instead of horizontal bracing. The total amount of steel needed is only 16 per cent. of that for a steel portal.



Pre-stressed concrete overhead portals, Amersfoort-Enschede electrification

Some 62 per cent. of station buildings and signalboxes were destroyed or damaged in the war. Designs for new stations are simple, embodying a spacious hall for both incoming and outgoing passengers, and a broad subway thence to the platforms. As the fixed-interval train service does not call for large waiting rooms or restaurants most stations have small waiting rooms and buffets on the platforms. In post-war sheds loading and unloading of "less-than-wagonload" freight is carried out in one enclosed shed where two rows of wagons may be handled.

Almost all bridges over main waterways were badly damaged or destroyed. Of 1,077 fixed bridges over smaller waterways and roads, 123 were damaged; 35 out of 126 movable bridges were damaged. One of the first bridges which could be temporarily repaired was that over the IJssel near Deventer, with the help of the British Royal Engineers.

Bridge Repair

For the repair of the bridge at Dordrecht Callender-Hamilton spans and spans from the temporary Waterloo Bridge, London, were used. The two main openings of this structure are now bridged by a continuous truss span, of which the chords and diagonals have a closed box section built up of plates and angles. The same system is to be used for the permanent reconstruction of the great Moerdijk Bridge over the mile-wide Hollands Diep on the Rotterdam-Antwerp line. During the war six of the 14 spans were destroyed and two more badly damaged. Temporary repairs were carried out with Waterloo Bridge and Callender-Hamilton spans. It is proposed to construct a new double-track bridge, and provision was made for two tracks when the piers were repaired; tests showed that the foundations could bear the additional load.

Large-scale railway construction works are being executed in Rotterdam, Eindhoven, and Leiden, at the two last-mentioned mainly in consequence of town planning requirements.

EGYPTIAN RAILWAY DEVELOPMENTS.—The Egyptian Cabinet is reported to have approved credits totalling £E15,000,000, spread over five years, for the purchase of rolling stock and material for the State Railways. One French and one Belgian expert have arrived to advise on the electrification of the Cairo-Helwan line; £E200,000 has been included in the 1951-52 budget for preliminary costs, the total of which is £E1,500,000.

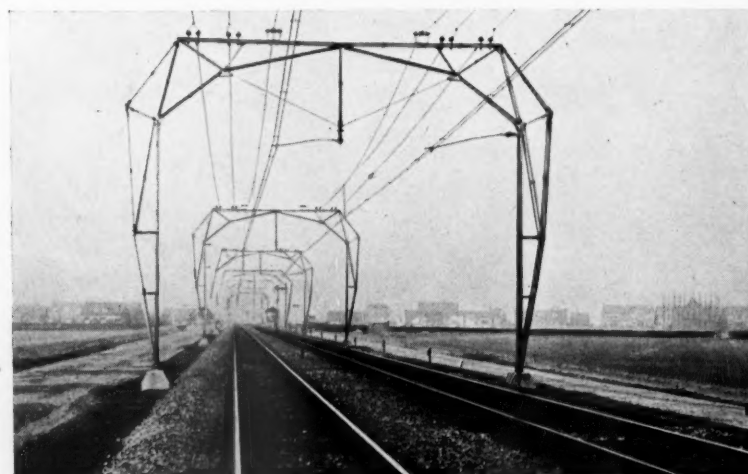
ELECTRIC AND PNEUMATIC PORTABLE TOOLS.—It would be difficult to name any industry or industrial operation where a portable power tool or product of one type or another has not already been applied. For this reason the portable power tools and equipment made by the Consolidated Pneumatic Tool Co. Ltd. and exhibited at Olympia cover an extremely large range. The display will include both pneumatic and electric portable tools and a special display will be made to show the Hicycle range.



Top layer of old ballast being pushed by plough to side of embankment to enable remaining ballast to be compressed



Concrete slab being laid on roadbed before re-ballasting on section subject to slight subsidence



Track after completion of roadbed improvements

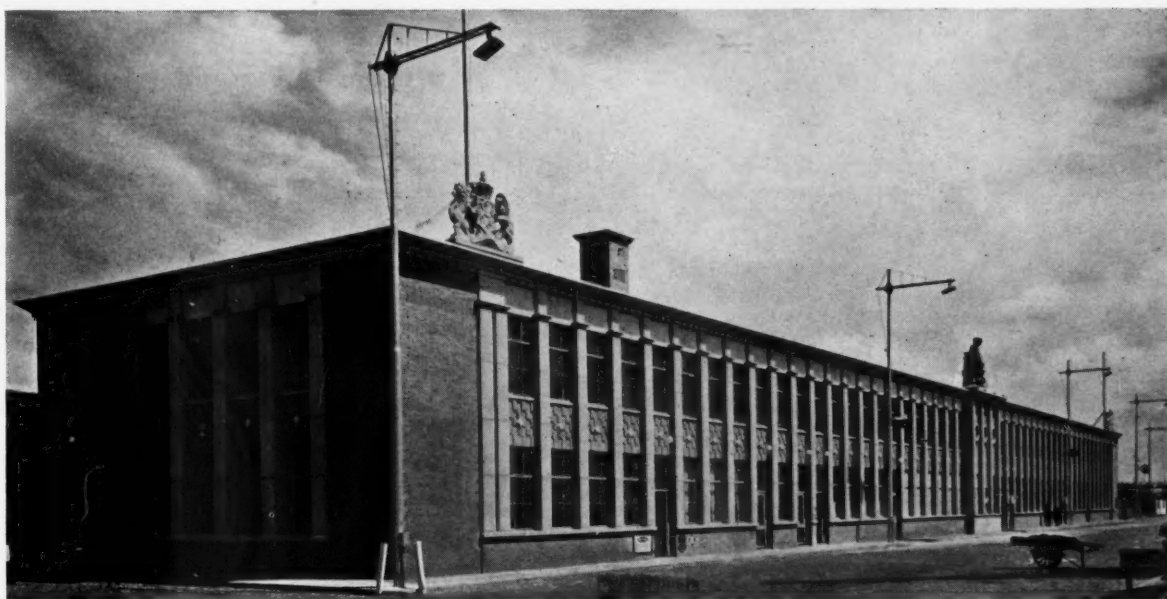
Post-War Engineering on the Netherlands Railways



New bridge at Dordrecht, with continuous truss main spans



Rebuilt station at Gouda, with bus station on right



New station at the Hook of Holland

Covered Aluminium Railway Wagons

Enabling greater pay loads to be hauled due to saving in tare weight

ALTHOUGH for some years railways have used aluminium in varying degrees in the construction of freight wagons it is claimed that a greater use of aluminium than hitherto has been made in a batch of covered wagons built at the Angus Shops of the Canadian Pacific Railway. These wagons were built for the Roberval & Saguenay Railway in the province of Quebec. They were built to the design and under the direction of the Aluminium Company of Canada Limited, a subsidiary firm of the Australian Aluminium Co. Pty. Ltd.

The vehicles are running on a regular

weight of 0.098 per cu. in.; all structural members are produced by the extrusion process.

The underframe is fabricated from aluminium centre longitudinals, bolsters, and transverse members, with welded-steel bolster centre braces. The drawgear follower plates are forged aluminium alloy, Alcan 26S-T, having a minimum yield strength of 50,000 lb. per sq. in. The centre sill comprises two longitudinals 12½ in. deep, spaced 12½ in. apart; and weighing 39.02 lb. per ft.; the bolsters and transverse members are of conventional design.

The floor supports, four in number,

are allowed to dry before the application of the plastic.

The interior of the wagon is lined with tongued and grooved boards; those for the floor are 1½ in. thick secured to the underframe members by aluminium bolts and clips. The side and end lining boards are 1½ in. thick and are secured to timber fairings held in position by aluminium bolts and stud rivets. The interior is given a coat of zinc Flinkote before the timber lining is fitted.

The bogies are of conventional A.A.R. design and are equipped with one-wear cast-steel wheels. Because of the low tare weight ABLC load com-



Aluminium covered goods wagon constructed for the Roberval & Saguenay Railway

schedule, carrying aluminium from the east and Canadian wheat from the west, for shipment overseas. The wagons have an aluminium body and underframe, weigh 34,400 lb. (15.4 tons), and are said to be the lightest covered goods wagons of their capacity yet constructed; they have been approved for interchange by the A.A.R. and are on regular service between the United States and Canada.

Features of Design

The wagon is 40 ft. 6 in. long × 9 ft. 2 in. wide × 10 ft. 6 in. high, and has a carrying capacity of 134,600 lb. (60 tons), giving a lightweight-load ratio of 3.91 to 1, which compares with 2.9 to 1 in the case of a steel wagon of similar capacity. The structural members are of aluminium alloy, Alcan 65S-T, which has a guaranteed minimum yield strength of 35,000 lb. per sq. in., and a

are of "Z" section, 1.9 lb. per ft., and are located two on each side of the centre longitudinals. The body structure is made up of ten uprights of "Z" section on each side of the underframe and the corner pillars and outer roof longitudinals are of "W" section; the side panels are of aluminium sheet 0.102 in. thick, and the side doors of Youngstown design.

The ends are of aluminium alloy, improved Dreadnought type, made up in three pieces with rounded corners, while the Murphy design of roof is also of aluminium alloy sheet. All rivets used in the superstructure are of Alcan aluminium alloy, 55S-T33, the clearance in the rivet holes being kept to a minimum. Where aluminium face joints are used the joints are given a coat of Aluminastic plastic compound; in the case of steel-to-aluminium joints, the surfaces are given a coat of zinc chromate and

compensating brakes are fitted to comply with A.A.R. requirements. The brake rigging, brackets, levers, and so on, are fitted with bushes of Shelby tubing. Ajax brake levers having an aluminium housing are fitted.

Steel rivets are used in the fabrication of the underframe and for securing safety appliances; these latter are painted yellow, whereas the outside of the wagon is cleaned only, and left in its natural state.

After completion all wagons are subjected to a deflection test. For this purpose wagons are given a load of 134,650 lb. (60.1 tons) evenly distributed and are given several hours shunting under railway conditions. Measurements taken showed a deflection after loading of 11 in.; after shunting with load 11 in.; and a permanent set after unloading of 1/16 in. The measurements were taken from the centre line of the vehicle.

RAILWAY NEWS SECTION

PERSONAL

Mr. D. Kirwan, Operating Superintendent, Coras Iompair Eireann, is retiring on September 30.

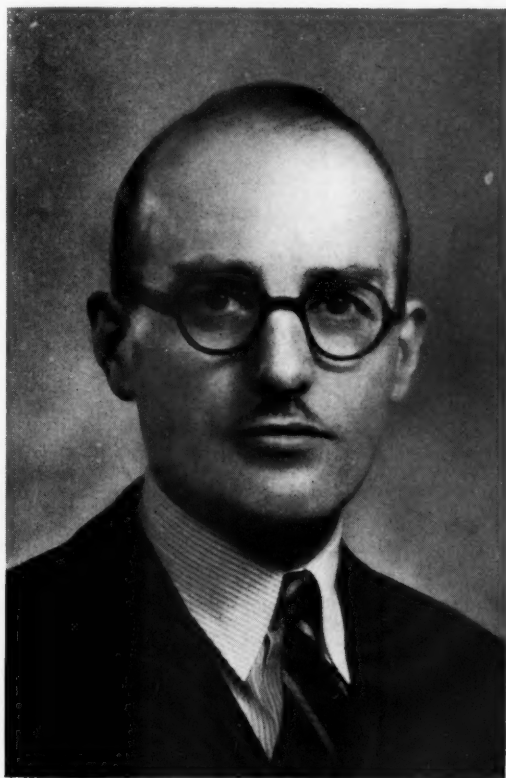
Mr. J. F. Harrison, M.I.Mech.E., M.I.Loco.E., Mechanical & Electrical Engineer, Eastern & North Eastern Regions, Doncaster, who, as recorded in our August 3 issue, has been appointed

and in 1950 became Mechanical & Electrical Engineer, Eastern & North Eastern Regions, British Railways.

We regret to record the death on August 20, at the Kent & Sussex Hospital, Tunbridge Wells, at the age of 76, of Mr. Harold Gilbert Brown, former Managing Director of Westinghouse Brake & Signal Co. Ltd. The cremation will be private.

Matthews who, as Chairman of the former Railway Companies Association presided, at the opening of the original club in January, 1943, has indicated his intention of being present.

Mr. R. A. Smeddle, M.I.Mech.E., M.I.Loco.E., Deputy Mechanical & Electrical Engineer, Southern Region, Brighton, who, as recorded in our August 3 issue, has been appointed Mechanical &



Mr. J. F. Harrison
Appointed Mechanical & Electrical Engineer,
London Midland Region



Mr. R. A. Smeddle
Appointed Mechanical & Electrical Engineer,
Western Region

Mechanical & Electrical Engineer, London Midland Region, Derby, was educated at Malvern Wells and Wellington College. He entered the service of the former Great Northern Railway in February, 1921, and became a pupil at that company's Doncaster Works. Mr. Harrison was Supernumerary Foreman in the Locomotive Running Department of the former L.N.E.R. at Doncaster and afterwards at Kings Cross during the years 1924 and 1925. He became Running Shed Foreman in charge of Wigan and St. Helens in 1926; Technical Assistant to the Locomotive Running Superintendent at Liverpool Street in 1929; Assistant to Locomotive Works Manager, Chief Mechanical Engineer's Department, Gorton, in 1930; Assistant Locomotive Works Manager, Doncaster, in 1937; Locomotive Works Manager, Gorton, in 1938; Mechanical Engineer, Gorton, in 1941 and Mechanical Engineer, Cowlairs, in 1945. Mr. Harrison was appointed Assistant Chief Mechanical Engineer at Doncaster in 1947,

NEW ZEALAND GOVERNMENT RAILWAYS

The following staff changes have recently been announced by the New Zealand Government Railways:—

Mr. A. J. Ede, Transportation Superintendent, to be Assistant General Manager, in place of Mr. E. H. Langford, retired.

Mr. C. T. Bishop, District Mechanical Engineer, Dunedin, to be Assistant Chief Mechanical Engineer.

Mr. D. A. Clarke, District Traffic Manager, Wellington, to be Transportation Superintendent.

Mr. W. E. Worsfold, Stationmaster, Frankton Junction, to be Staff Superintendent, in place of Mr. J. Hannah, retired.

Mr. Donald MacKinnon, Manager of David MacBrayne Limited, Glasgow, has retired.

TRANSPORTATION CLUB DINNER

The next monthly dinner of the Transportation Club has been arranged for Friday, September 28. Sir Ronald W.

Electrical Engineer, Western Region, Swindon, was educated at Aysgarth and Harrow. He served in the R.F.A. in France during the 1914-18 war and also in the Army of Occupation; towards the end of 1919 he joined the North Eastern Railway as a pupil. Subsequently he gained experience in the running department of the L.N.E.R. at Leeds, and the traffic department at York. In 1925 he was appointed Assistant Works Manager, Cowlairs, and three years later became Assistant Carriage & Wagon Works Manager at York. In 1929 Mr. Smeddle was transferred to London as Outdoor Carriage & Wagon Assistant, and in 1931 returned to Cowlairs as Works Manager. In 1936 he was appointed Locomotive Works Manager, L.N.E.R., North Road Works, Darlington, retaining this position until 1941, when he was appointed Mechanical Engineer, L.N.E.R., Darlington, and took charge of Shildon, Faverdale and Walker Gate works, in addition to North Road. In 1945 the York Carriage & Wagon Works



Mr. C. E. Dunton
Appointed Civil Engineer, London
Transport Executive

were added to his responsibilities. Mr. Smeddle was appointed Deputy Mechanical & Electrical Engineer, Southern Region, British Railways, in October, 1949.

Mr. C. E. Dunton, M.I.C.E., formerly Technical Planning Officer, London Transport Executive, who, as recorded in our August 3 issue has been appointed Civil Engineer, is 52. He was educated at Haberdashers' School, Hampstead, the Royal Military Academy, Woolwich, and Christ's College, Cambridge, where he obtained the degree of Master of Arts with second class honours in mathematics and mechanical sciences. He entered the service of the Underground Group of Companies in 1923 and served successively as a technical assistant in the architectural, new works, bridge, permanent way (railways) and works and building sections of the department. In 1939 he was appointed Permanent Way Engineer (Railways) and during the period



Mr. L. M. Sayers
Appointed District Operating Superintendent,
Nottingham, London Midland Region

that he held this appointment was a member of the London Transport Passenger Board's Postwar Planning Committee. He was appointed Civil Engineer (Development) in 1947 and Technical Planning Officer in 1948.

Mr. L. M. Sayers, District Operating Superintendent, Hull, North Eastern Region, who, as recorded in our August 10 issue, has been appointed District Operating Superintendent, Nottingham, London Midland Region, was educated at Woodbridge and joined the L.M.S.R. at Belper in 1927. In 1932 he became a member of the first traffic and shunting analysis section when those sections were started on the L.M.S.R. by the late Lord Stamp. Mr. Sayers served as Assistant District Signalmen's Inspector, Lancaster Castle Control Area, and later Heaton Norris Control Area, from 1933 to 1935, when he became personal runner attached

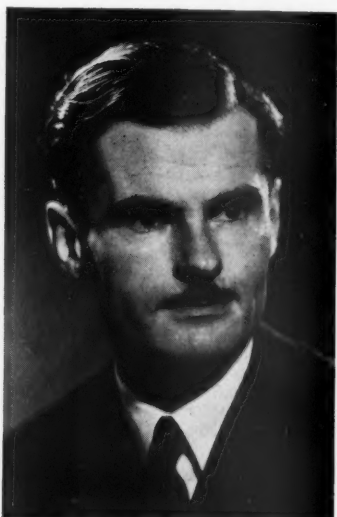


Mr. H. E. Kemp
Appointed Wagon Works Manager, Earlestown,
London Midland Region

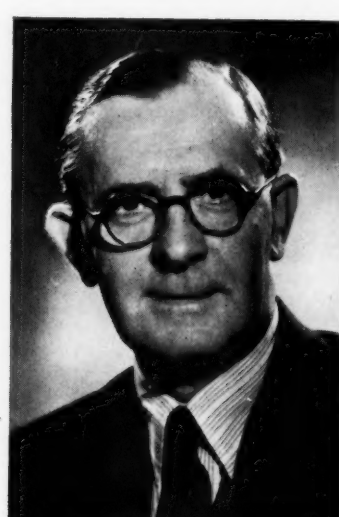
to the District Goods & Passenger Manager, Chester. He received subsequent appointments as Assistant District Controller, Peterborough, in 1936; Head Office Inspector (Freight Services), Derby, later in the same year; Assistant Stationmaster & Goods Agent, Heysham Harbour, in 1937; Stationmaster, Lancaster Castle, in 1940; Head Office Inspector (Passenger Services), Crewe, later in 1940; Acting Senior Clerk, Freight Services Section, Chief Operating Manager's Office, at headquarters, in 1943; Assistant Divisional Controller (Freight Services), Derby, in 1945; District Controller, Peterborough, in 1946; and Assistant District Operating Manager, Leicester, in 1947. He was appointed Operating Assistant to the Secretary & Manager, Cheshire Lines, Liverpool, British Railways, and District Operating Superintendent, Hull, North Eastern Region, in 1950. During 1938, Mr. Sayers was a student at the inaugural



Mr. E. P. Platt
Appointed Assistant Estate & Rating Surveyor,
Western Region



Mr. K. Brinsmead
Appointed Assistant Civil Engineer
(Permanent Way), London
Transport Executive



Mr. H. Raine
Appointed Assistant Civil Engineer (General),
London Transport Executive

session of the L.M.S.R. School of Transport, Derby. He is the second son of Mr. J. Sayers, at one time Telegraph Superintendent of the Midland Railway and subsequently of the L.M.S.R.

Mr. H. E. Kemp, M.B.E., Executive Officer (Wagons), Railway Executive headquarters, who, as recorded in our August 10 issue, has been appointed Wagon Works Manager, Earlestown, London Midland Region, was educated at the King Edward VI School, Southampton, and commenced his railway career as a general apprentice at Eastleigh Carriage Works in 1920. In 1926 he was moved to London (Grosvenor Road, Victoria) as an assistant to the Outdoor Carriage & Wagon Assistant, and was appointed Chief Carriage and Wagon Inspector in 1933. He was appointed Outdoor Carriage & Wagon Assistant to the Chief Mechanical Engineer in 1936 and Executive Officer (Wagons), Railway Executive headquarters, in 1950. He was awarded the M.B.E. in the New Year Honours, 1947.

Mr. E. P. Platt, A.R.I.C.S., L.R.I.B.A., General Assistant to Surveyor & Estate Agent, Western Region, who, as recorded in our August 3 issue, has been appointed Assistant Estate & Rating Surveyor, Paddington, entered the service of the Great Western Railway in 1922 and has spent the whole of his railway career in the Surveyor's & Estate Department at Paddington. In 1948 he was appointed General Assistant to the Surveyor & Estate Agent, having formerly been head of the section dealing with maintenance and new building works on the G.W.R. He attended the University College, Reading, and is a member of Reading Society of Architects.

Mr. K. Brinsmead, D.S.O., M.I.C.E., M.I.Mech.E., A.C.G.I., formerly Permanent Way Engineer (Railways), London Transport Executive, who, as recorded in our August 3 issue, has been appointed Assistant Civil Engineer (Permanent Way), responsible for all matters relating to the design, construction and maintenance of permanent way (including tramways), is 45. He was educated at Uppingham School and the City and Guilds Engineering College, entered the service of the L.M.S.R. in 1924 and transferred to the L.N.E.R. in 1929. In 1935 he joined the London Passenger Transport Board as a technical assistant in the Office of the Permanent Way Engineer (Railways). From 1939 to 1945 he served with the Royal Engineers, becoming ultimately Liaison Officer to the Engineer School and Engineer Board of the U.S. Corps of Engineers, with the rank of Lt.-Colonel. For his war service he was awarded the D.S.O. and the Legion of Merit (U.S.A.) and mentioned in despatches. He rejoined London Transport in 1946 as Chief Assistant to the Permanent Way Engineer (Railways) and was appointed Permanent Way Engineer (Railways) in 1947.

Mr. H. Raine, formerly Assistant to the Chief Engineer, London Transport Executive, who, as recorded in our August 3 issue, has been appointed Assistant Civil Engineer (General), responsible for matters relating to technical investigations, accounts, contracts and staff in the Chief Engineer's department (other than the Electrical Engineer's division), is 58. He entered the service of the London County Council Tramways in 1920 as a technical assistant and became principal technical assistant to the Permanent Way Engineer (Trams) in 1933. He was appointed an

Officer of the London Passenger Transport Board in 1937, with the title of Permanent Way Engineer (Trams), a position which he relinquished in 1944, on taking up his appointment as Assistant to the Chief Engineer.

Mr. F. W. Aickin, who has recently retired as General Manager, New Zealand Government Railways, will shortly re-enter the legal profession. Immediately before his appointment as General Manager, Mr. Aickin was Staff Superintendent and Chief Legal Adviser to the Railways Department.

Mr. R. J. Purves, Assistant Signal & Telecommunication Engineer, North Eastern Region, British Railways, has retired.

Mr. L. G. B. Rock, Permanent Way Assistant, Civil Engineer's Department, Southern Region, has been appointed Assistant Engineer (Permanent Way).

Mr. Peter Wrightson has been elected to a seat on the North Eastern District Board of Martins Bank Limited. Mr. Wrightson is Deputy Managing Director of Head, Wrightson & Co. Ltd.

The London Transport Executive has announced that Mr. A. C. Edrich, Senior Assistant to the Permanent Way Engineer, has been appointed Permanent Way Engineer (Railways), and will report to the Assistant Civil Engineer (Permanent Way).

The Minister of Transport has approved the appointment of Mr. Lewis Mizen and Mrs. D. Young, to be Members of the Transport Users Consultative Committee for the South Eastern Area. Mr. Mizen is Vice-Chairman of the Surrey Horticultural Branch of the National Farmers' Union, and Mrs. Young, of Sittingbourne,

Kent, is a Member chosen by the Minister of Transport to represent the ordinary travelling public.

We regret to record the death, at the age of 71, of Mr. Raoul Dautry, General Manager, French State Railways, 1928-37, and subsequently a Director of the French National Railways Company. After the war he was appointed French Minister of Reconstruction and had latterly been Administrator, French Atomic Energy Commission.

Mr. F. C. Badhwar, Chairman of the Indian Railway Board, arrived in this country by air on August 20 as head of an Indian Purchasing Mission. He will make a six week tour of Britain and the European Continent in connection with the placing of orders under the Railway Board's 1952-53 locomotive, carriage and wagon programme, and will be accompanied by Mr. K. Sadagopan, Director of Finance, Railway Board, and Mr. K. B. Rao, Director General of the India Store Department in London.

We regret to record the death on August 18, at the age of 71, of Mr. P. C. Young, C.B.E., Coal Commissioner under the Government of India during the latter part of the 1939-45 war. After experience on the engineering staff of the Caledonian Railway he had joined the Public Works Department of the Government of India in 1903 and in 1911 was appointed Assistant Secretary of the Railway Board. In 1916 he became Engineer-in-Chief of the Nushki Extension Railway and in the next year went to France as Deputy Chief Railway Construction Engineer. During the last year of the 1914-18 war he was Assistant Inspector-General of Transportation in France and received the honour of C.B.E. in 1919.

Presentation to Mr. O. W. Cromwell



Mr. O. W. Cromwell, who has retired from the position of Chief Officer for Labour & Establishment, Southern Region, Mr. C. P. Hopkins, Chief Regional Officer Southern Region, and Mr. John Elliot, Chairman of the Railway Executive, at a presentation to Mr. Cromwell

The Cogeneity of the Railway Unions' Case

A reply to "The Railway Gazette" on railway wages

An editorial article, "Muddled Thinking on Railway Wages," appeared in our August 10 issue. The following reply, described as the "purely personal view" of the author, "Rank and Filer," was published in the August 17 issue of the *Railway Review*, under the title "The Cogeneity of the Case":—

The Railway Gazette has accused the General Secretary and the Editor of the *Railway Review* of "muddled thinking" in the articles which appeared the week before last under the headings "Application for Increase in Wages" and "This is just too bad." These two stalwarts are so obviously capable of answering the charge themselves (if they should think that necessary) that it would be presumptuous for anyone else to do so. Nevertheless, the application for a 10 per cent. increase in salaries and wages is of such urgent and vital concern to all railwaymen that an ordinary rank and file member may be permitted to let off a little steam.

The Railway Gazette is an excellent technical journal. It is also, according to its own description, a "Journal of Management." It will not object, therefore, if its readers assume that when it comments on labour relations it represents the views of the "management."

What has it got to say about our claim for a 10 per cent. increase? After disposing somewhat superficially of the articles in the *Railway Review*, it concludes:—

"If there was any assurance that the arguments which will be advanced in support of the present wage claim would be no more cogent than those which appear in these two articles, the British Transport Commission might rest easy in the assurance that no impartial body would add to its labour costs."

Nobody except the General Secretary and his back-room boys can possibly know all the arguments which the N.U.R. will advance in support of the application, but there is no secret about one of them. Time and time again the union has repeated that unless salaries and wages are increased to compare with those of other industries, more and more railwaymen will leave their jobs and recruits will not be forthcoming in anything like sufficient numbers. There was no "muddled thinking" behind that argument: it has now been proven as a statement of fact. Every railwayman knows of the management's recent approach to the unions to help them solve their problems in the "black" areas, grave problems which they admit are due to shortage of staff.

Would *The Railway Gazette* consider it a cogent argument that the management are largely responsible for the sorry mess in the black areas because they ignored the warning given so repeatedly by the union?

Has it not been obvious for years that, in spite of his traditional loyalty to the industry, a railwayman cannot for ever resist the attraction of a better-paid job, particularly when so many of those jobs offer the additional attraction of regular hours, better conditions, better welfare facilities?

If the application for a 10 per cent. increase—modest enough, in all conscience—can be dismissed as easily as *The Railway Gazette* appears to believe, will the

management be able to import and train sufficient Italian labour to fill the jobs of the many British railwaymen who will undoubtedly grasp the opportunities now open to them?

Does *The Railway Gazette* really believe that this very real and personal problem of making ends meet, at a time when the rising cost of living is keeping the "ends" further apart, is some academic question to be considered in the same manner as, say, the cost of painting some country station? If so, they should listen to the railwaymen's wives. One I know, married to a Class 4 clerk, recently wrote to the union begging that something be done to increase her husband's salary as the struggle to live was becoming unbearable. There are many like her.

Can the management afford to be smug? The railways are now facing grave difficulties. Nothing would add to those difficulties as much as failure on their part to realise that better wages and conditions are inevitable if the industry they manage is

not to collapse into a state which would render it quite incapable of coping with the nation's goods and passenger transport requirements.

That is the background to the railwaymen's claim for a 10 per cent. increase. To deny it or ignore it would be muddled thinking indeed.

The question has already been asked "Where is the money to come from?" It will be repeated many times in the near future. It is a question which the management and, if necessary, the Government must answer. But there are no arguments sufficiently cogent to upset the obvious truth that wages *must* be increased. With money flowing like water for re-armament, the success of which depends to such a large extent on the efficiency of the railways, financing an increase of 10 per cent. in railwaymen's salaries and wages should be a relatively simple matter for the experts who control the spending of thousands of millions. Are not the railways as vital to the nation as the mines or the police force?

Will the "management"—that rather (to most railwaymen) distant and obscure body—deal with this application in the superficial manner of the writer in *The Railway Gazette*? I think not; the issue is far too grave.

Protecting London Transport Rolling Stock in Cold Weather

Much use is made in London Transport rolling stock of compressed air for operating various equipments, such as the braking system and door operating and traction equipment. Some cars are fitted with electrically driven compressors, with reservoirs for storing compressed air from which it is piped as required. As the moisture content of the atmosphere in this country is relatively high, fairly large quantities of water are collected when the air is compressed. Most of this can be drained off from the reservoirs and baffles provided, but some is carried into the air system and can cause serious blockage in the pipe lines or equipment, or valve failure should it become frozen.

Only one-third of Central Line trains stable under cover at night, and on the remaining stock, which stables in the open, special precautions have to be taken in the

winter to prevent equipment from freezing up. These include keeping the air circulating by operating equipments at intervals; feeding alcohol anti-freeze into the air system through the compressor intake; and keeping car heaters on. Whilst they have proved beneficial, they have not provided complete protection. Considerable trouble is also experienced from draughts causing a local drop in temperature, and at High Barnet sidings on the Northern Line, use has been made with advantage of wattle fencing to provide a screen from prevailing winds.

Asbestos Screens

When the Central Line was extended to Hainault in 1948, use was made of the experience gained from this experiment, and a series of screens erected to give protection to trains stabled in the exposed



Hainault Depot, Central Line, showing asbestos sheet screens protecting stabled rolling stock against the weather

sidings attached to the depot, which have accommodation for 29 eight-car trains. It was found necessary to erect four screens to divide the sidings into bays of four roads each. The screens, designed by London Transport engineers, are of corrugated asbestos sheets bolted to either side of an 11-ft. high framework of 8-in. rolled-steel joists and 3-in. angle iron. Three of the screens are some 870 ft. long, and the fourth, adjacent to the main shed, is some 170 ft. Openings are provided mid-way where a walkway gives access to the sidings from the depot, and sliding doors are fitted at these positions. Provision is made for motorised roller shutters which will eventually be fitted at the north end to complete the protection. The screens themselves were completed in the summer of 1950 and were found to be most effective last winter.

Institute of Transport Awards

The Council of the Institute of Transport has approved the following awards for papers submitted during the 1950-51 session and in respect of successes at the Institute examinations held in 1951:—

British Transport Commission Awards: (a) to Mr. S. E. Parkhouse, Chief Officer (Operating), Railway Executive, for his paper on "Railway Freight Rolling Stock"; (b) to Mr. N. S. Taylor, Assistant to Executive Officer (Special Duties), Railway Executive, for his paper on "Some London Freight Problems"; (c) to Mr. N. D. H. Smith, Eastern Counties Omnibus Co. Ltd., for his paper on "The Presentation of Road & Rail Passenger Service Information to the Public"; (d) to Mr. M. J. Richardson, Eastern National Omnibus Co. Ltd., for a meritorious performance in the Graduateship examination.

Road Transport (Passenger) Medal to Mr. A. F. R. Carling, General Manager, Southdown Motor Services Limited, for his paper on "Management and the Size of the Operating Unit."

Institute 1944 Award to Mr. G. F. Bilbrough, formerly Traffic Adviser, Birmingham Chamber of Commerce, for his paper on "No Place on the Road."

Institute Student Award to Mr. D. O. Bustard, British Overseas Airways, for his paper on "Passengers by Air."

"Modern Transport" Award to Mr. C. R. Harley, George Kemp Limited, for his paper on "The Large Trader—An Efficient Transporter."

Institute Associate Membership Examination Prizes: (a) Prize for first place to Mr. O. C. Cochrane, British Overseas Airways; (b) prize for second place to Mr. F. K. Pointon, Ribble Motor Services Limited.

Institute Graduateship Examination Prizes: (a) Prize for first place to Captain J. A. Taylor, R.E., Movement Control Officer; (b) prize for second place to Mr. R. W. Spurgeon, Ministry of Civil Aviation.

BRITISH RAILWAYS IRON, COAL, AND STEEL CARRIAGES.—During the weekend to Monday, August 20, British Railways cleared 269,910 tons of coal from deep-mined pits and open-cast sites, making a total of 2,967,550 tons for the week. The latest available figures for iron and steel show that 135,995 tons were conveyed during the week ending Saturday, August 11, from principal steel works.

Holyhead-Dun Laoghaire Service

Delays and outshipment caused by exceptional circumstances

Brief reference was made in our last week's issue to the inability of British Railways steamer service to convey all intending passengers from Dun Laoghaire to Holyhead by the night sailings on August 10 and 11. The Chairman of the Railway Executive, Mr. John Elliot, on August 14 sent a telegram to Mr. J. A. Nugent, Chairman of the Irish Tourist Board (in reply to a protest by the latter) pointing out that British Railways had provided two new vessels and improved passenger handling facilities at Holyhead, whilst those at Dun Laoghaire remained inadequate, though improvements had been promised by the Irish authorities. Mr. Nugent subsequently described the reference in the telegram to passenger handling facilities at Dun Laoghaire as irrelevant, and pressed for an enquiry into the events of August 10 and 11.

The Irish Tourist Board submitted a report on August 21 to the Ministry for Industry and Commerce on the "unsatisfactory conditions which continue on the British Railways' Dun Laoghaire-Holyhead service."

On August 14 the *Hibernia* (passenger complement 2,000), which was working the service in conjunction with her sister ship *Cambria* and the relief vessel *Duke of York* (passenger complement 1,100) developed engine trouble and was taken out of service, thus reducing the passenger capacity of the service. She returned to service on August 17, but developed further engine trouble next day on an eastbound voyage, and was again withdrawn. In addition, on August 17, the *Duke of York*, which draws more water than *Cambria* and *Hibernia*, was delayed in leaving and, later, in entering Holyhead Harbour by abnormally low spring tides. As the result chiefly of the absence of the *Hibernia*, a number of passengers could not be conveyed from Dun Laoghaire on August 17 by the morning sailing. In each case, special relief sailings were arranged whenever possible to convey passengers outshipped at Dun Laoghaire.

The London Midland Region has pointed out that the trouble has been due to four simultaneous factors: lack of adequate passenger handling facilities at Dun Laoghaire Harbour; failure of passengers to provide themselves with sailing tickets for controlled sailings or to avail themselves of the service for which they hold tickets; the breakdown of the *Hibernia*; and the abnormal spring tides.

Facilities at Dun Laoghaire

Regarding Dun Laoghaire Harbour, the L.M.R. states that although two ships can come alongside the pier, on the North and South sides, passenger handling, including customs examination facilities, exist on the North side only, so that only one vessel can be embarked or disembarked at a time. Responsibility for harbour installations lies with the Irish Board of Works, and it is stated that although new facilities have been promised, no steps have been taken to date to provide these.

Regarding the issue of sailing tickets for certain services during the high season, it is stated that the additional sailing from Dun Laoghaire at 10.45 p.m., as a relief to the 8.40 p.m. sailing, on Friday night, August 10, was not advertised; there was therefore no reason for passengers intending to travel that evening to suppose that

they could embark without sailing tickets. Passenger traffic returns show that the combined capacity (5,100) of the *Cambria*, *Hibernia*, and *Duke of York* is more than adequate to maintain summer seasonal traffic in normal conditions.

It is understood that the Railway Executive has suggested a meeting with all parties concerned at an early date and that the Chief Regional Officer of the London Midland Region will arrange representation of British Railways.

Talgo Train Building

At a conference at Bilbao in June between technical representatives of the Spanish Oriol concern (which owns the building patents of the inventor of the Talgo train) Société d'Entreprises Industrielles Charentaises, Waggonfabrik Uerdingen A.G. and the American Car & Foundry Company (the United States firm which built the first two Talgo trains for Spain as well as an American version for the Chesapeake & Ohio Railway) a closer technical collaboration between the firms was discussed. The French and German firms have acquired the licence for building Talgo trains.

Oriol intends to build Talgo trains also, in Spain, although it is handicapped by the lack of machine tools and skilled labour. It is believed that in the meantime further Talgo trains for Spain are to be built in France and Germany. The American Car & Foundry Company owns the Talgo building licence for the western hemisphere, and has supplied a few Talgo sets to Mexico.

The conference discussed the adoption of Talgo trains on international routes. The scheme has been sponsored by the International Talgo Company, an Oriol associate, and another conference, to be held in September, is to debate this problem as well as with technical improvements to be adopted for the new Talgo sets.

Señor Goicoechea, the inventor of the Talgo system (the name Talgo is an abbreviation embodying the initial letters of the term "tren articulado ligero Goicoechea-Oriol," or Goicoechea-Oriol articulated light train) proposed about a year ago the adoption of Talgo trains for the submarine tunnel between Gibraltar and Spanish Morocco, the building of which he considers of the first importance. Señor Goicoechea believes that the building costs of the tunnel would be considerably lower if the tunnel were constructed exclusively for lightweight Talgo trains.

The first two Talgo trains in Spain began working on the 396-mile Madrid-Irún main line on July 8, 1950; details of the working were recorded in our February 16, 1951 issue.

Ministry of Transport Accident Report

Clipstone West and East Junctions, Eastern
Region, British Railways; May 12, 1950

Colonel R. J. Walker, Inspecting Officer of Railways, Ministry of Transport, inquired into the accident which occurred at about 7.36 a.m. on May 12, 1950, between Clipstone West and East Junctions, on the Chesterfield-Lincoln line, when the 7.25 a.m. passenger train Shirebrook North to Lincoln, consisting of three coaches hauled by class "N5" 0-6-2 tank engine No. 69319 became totally derailed. It was a fine clear day. There were no injuries of any consequence to any person. The train had just passed through the facing points at the West Junction and was running at about 35 m.p.h. with regulator closed. One coach fell on its side.

The line is classified as "primary B." Its traffic is mainly freight, and it falls for nearly $1\frac{1}{2}$ miles at 1 in 100 to the West Junction, whence it continues level and curves slightly to the left. The speed limit is 60 m.p.h. The track was laid with 95-lb. bull-head rails in 45-ft. lengths 25 years ago; their average weight had fallen to 84 lb. They had been turned some three years previously and the general condition of the track was fair. Gauge was accurate and did not vary appreciably, and the timber sleepers and fastenings were reasonably good, with no sign of gauge spreading. Ballast was dry ash and stone and of adequate depth. Measurements leading up to the point of derailment revealed sharp variations in cross-level, and there were fairly considerable voids in places, with some side cutting of rails. The track was due for renewal a month later.

The line was maintained by a trolley gang of ten men responsible for 14 miles of running line. The permanent way inspector walked the length about once a week, the ganger once a fortnight, and the patrolman and another four times a week. The chief inspector rode over it on the footplate about once every six weeks and walked the length periodically at intervals of five or six months. The track had actually been inspected by all four men within the preceding week and all considered it to be reasonably good. The defects indicated on the diagram were known and the chief inspector had mentioned them to the inspector on May 6. They were not regarded by either as serious and no speed restriction was considered necessary. Normally the patrolman should inspect daily, except on Sundays, but on account of the small number of passenger trains, four times weekly had been considered sufficient.

The report gives particulars of the engine, built in 1899 and last completely repaired on March 14, 1949; it had since run 15,000 miles. Leading coupled and radial axles had laminated bearing springs. The driving and trailing coupled axles had pairs of coil springs and five of the eight were found broken. (Three were known to be before.) Wheel flanges and tyres had good profiles without undue wear. The coaches were known to have been in good order on the morning of the accident.

Evidence

The engine crew could give little helpful information. About 80 yd. past the junction they felt a pull, and a coach was observed to be derailed; and they then realised that the engine was derailed also; neither was accustomed to this class of

engine and the driver said that it oscillated more than some and that the ride had been uncomfortable. The fireman thought these engines rode much as any others, but oscillated vertically and horizontally. A driver who had driven this particular one for some time, and liked it very much, was riding in the train. On the previous day he thought it to be riding well. It did not oscillate more than others of the class; all had "a sort of up and down movement."

There was no intentional cant through the junction, but, in fact, 70 ft. beyond the points the cess rail was over one inch high, and this changed to the 6 ft. rail $\frac{3}{4}$ in. high 50 ft. farther on, 109 ft. from the point of derailment. This sudden reversal and change of cant of nearly 2 in. was followed 64 ft. further on again by a track distortion of 4 in. to the left, continuing for 55 ft. A clear mark showed that a wheel had crossed the head of the 6 ft. rail in the unusually short distance of 4 ft. and then dropped outside. The first indication of derailment on the cess side occurred 10 ft. further ahead where a chair had been scored.

Inspecting Officer's Conclusion

The derailment was caused by the condition of the track and to a lesser extent by that of the engine. The principal fault in the track was the rapid and very considerable reversal of cross-level. Side cutting of rails suggested that side to side oscillation of engines was usual as they passed through the junction and it may have persisted for some time. No doubt this oscillation was in phase with the variation in cross-level and the engine swung to the right at the high spot on the cess rail, which was at the nose of the crossing, and to the left where the 6-ft. rail was high. This would almost certainly have accentuated this movement into a strong lurching and dipping motion. On the next swing to the right the tail of the engine probably lurched to the left and this reduced the weight of the leading coupled axle momentarily. The side pressure was sufficiently strong to distort the track to the left and slue the engine slightly askew; the right-hand leading coupled wheel was forced to mount the rail.

Remarks

A feature of this derailment was that the track had been inspected within the previous week by no fewer than four men. The chief inspector and inspector had both checked for cant and gauge and had noticed differences in cross-level at the particular point and observed sleepers requiring packing; yet no one considered it to be anything out of the ordinary or deserving of more than routine attention.

The inspectors probably regarded the change of cross-level as no more than a reasonable run off; if they did, they overlooked a much more important point, namely, that it was not a normal run off but a reversal of elevation from one rail to another, which is a very different thing. They may have been influenced by knowing the track to be due for renewal in a few weeks. It should not, however, have been left unrestricted in that condition; it was not safe for 60 m.p.h. All concerned were experienced men, but their standards of maintenance were not perhaps as high

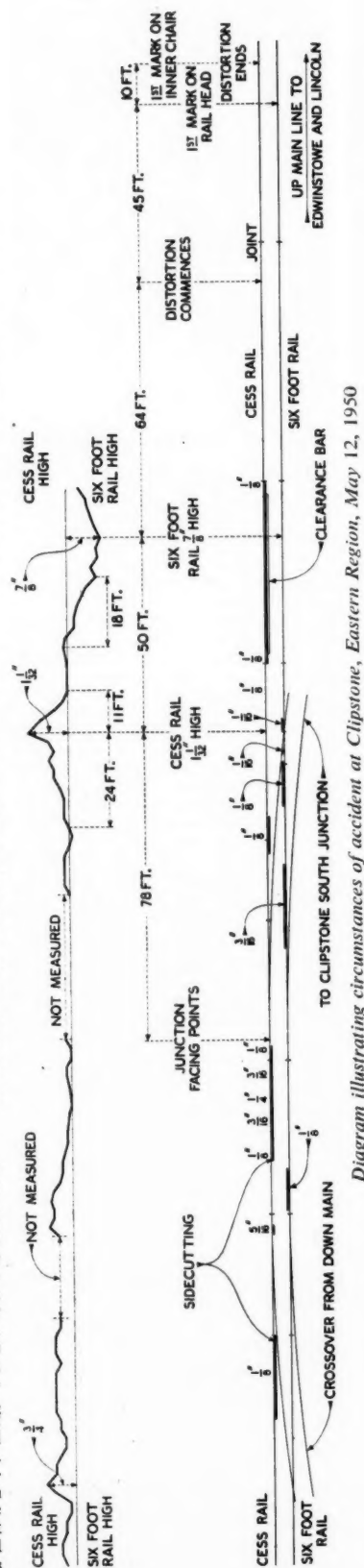


Diagram illustrating circumstances of accident at Clipstone, Eastern Region, May 12, 1950

as they should have been, and they allowed themselves to fall into an error of judgment.

Further, the engine was allowed in traffic with three broken springs, which had been booked for a long period without receiving attention. The first booking was on December 5, 1949, the second on January 15, 1950, and the third was made in the March. No doubt this has now received the attention of the officers concerned.

The moral would appear to be that no one department, in assessing the importance of its own repair work, should assume that all the other related conditions necessary are perfect. That apparently happened in this case. The major deficiency in the track and the minor one in the locomotive coincided and the derailment resulted.

Staff & Labour Matters

Railway "Efficiency Committee"

In a joint statement by the Railway Executive and the three railway trades unions, the N.U.R., A.S.L.E.F., and T.S.S.A., last Monday, it was announced that the Special Joint Committee ("efficiency committee") of the Executive and unions, set up in February, had a further meeting that day. The statement adds that the matters already under discussion were reviewed, and that arising from that review proposals made by the Railway Executive will be the subject of immediate examination by the union executives concerned, after which a further meeting will be held. The matters already under discussion include lodging turns; the proposals made by the Railway Executive include those for alleviating manpower shortage to which editorial reference was made in our July 20 issue.

Railway Wage Claim

Detailed statements in support of their joint claim for a 10 per cent. wage increase were submitted to the Railway Executive on August 21 by leaders of the three railway trades unions. Mr. W. P. Allen, Member of the Railway Executive, said that a reply would be given at a later meeting.

About 450,000 employees are affected by the claim, which has also been submitted formally on behalf of members of the three unions employed by other Executives of the B.T.C.

It is understood that the Railway Executive will probably not reply for two or three weeks.

London Transport Wage Claim

A wage claim on behalf of 58,000 London bus, tram, and trolleybus workers made by the T.G.W.U. was discussed by the London Transport Executive and the union on August 16. The talks were adjourned to enable both sides to consider the progress made. Another meeting is expected shortly.

Post Office Engineers' Claim

The national executive of the Post Office Engineering Union, after a meeting in London on August 15, announced that it was unable to regard the recent award of the Civil Service Arbitration Tribunal as "a final settlement" of the demands of the main engineering, motor transport, and supplies grades.

The award affects nearly 60,000 members of the union. It gives an average increase of 10s. a week, back-dated to

June 1, compared with the original claim of 25s. a week made by the union and the offer of 5s. a week by the Post Office.

C.S.E.U. Wage Claim

The annual conference of the Confederation of Shipbuilding & Engineering Unions, whose decisions affect more than 2,500,000 workers, including many railwaymen, decided on August 15 to present immediately a claim for an all-round increase of 20s. a week of 44 hr., to both the engineering and shipbuilding employers. The unions will ask for all merit and craft rates and district differentials to be maintained and for the increase to be operative from the date of the claim.

If granted in full, the claim would cost more than £100 million a year, and bring the minimum rate for unskilled workers up to £6 a week and for skilled to £6 18s.

French National Railways New Cross-Channel Steamer

The *Cote d'Azur*, the new oil-fired turbine vessel of the French National Railways, which work the Short-Sea routes jointly with British Railways, completed her maiden voyage from Calais to Folkestone on August 15. She was built by the Forges et Chantiers de la Méditerranée at Le Havre, which firm has also built previous vessels for the cross-Channel services.

The passenger complement is 1,450, maximum speed 24 knots, overall length 365 ft., breadth 50 ft. 7 in., mean draught 12 ft. 4 in., and displacement 3,012 tons.

Accommodation includes a large tea lounge on the upper deck, two *cabines de grande luxe*, and a large hold aft for motorcars. Radar and echo-sounding apparatus have been installed.

On August 15 the *Cote d'Azur* was inspected at Folkestone by railway officers and travel agents, who were received afterwards by the Mayor of Folkestone. Those present included:

MM. Doudrich, Chief Commercial Manager, Northern Region, French National Railways, and P. R. Deshayes, Managing Director, French Railways Limited (London); Messrs. J. P. Campbell, Superintendent Marine Engineer, Southampton, T. W. D. Abell, Divisional Marine Manager, Dover, H. J. Bourn, Assistant Continental Superintendent, and F. D. Y. Faulkner, Public Relations & Publicity Officer, Southern Region; Mr. M. B. Thomas, Public Relations & Publicity Officer, Eastern Region; and Mr. F. D. M. Harding, General Manager, the Pullman Car Co. Ltd.

Contracts & Tenders

An Indian Purchasing Mission headed by Mr. F. C. Badhwar, Chairman of the Indian Railway Board, arrived in Great Britain by air on August 20. The mission is visiting this country and the European Continent in connection with the call for tenders under the 1952-53 locomotive, carriage and wagon programme referred to in our July 6 and 20 issues.

In connection with its 1952 locomotive programme, British Railways has placed a contract with British Timken Limited for tapered roller bearing axleboxes to be fitted on all engine and tender axles of 20

Latest Vapor-Clarkson Steam Generator



Mr. J. N. Gresham, Chairman & Managing Director, and Mr. Gala Marsh, Chief Engineer, Gresham & Craven Limited, with Mr. O. A. Rosboro, Vice-President in charge of foreign sales, Vapor Heating Corporation, U.S.A., inspecting the latest model Vapor-Clarkson steam generator at Chicago

Class "7" Pacifics and 20 Class "5" 4-6-0s. The tenders of 55 Class "4" 4-6-0s and 10 Class "2" 2-6-0s will also be fitted with Timken bearings. The order covers 200 cannon boxes and 670 single boxes.

The Commonwealth Government Railways, Australia, have placed an order for 14 diesel-electric locomotives of 955 b.h.p. for general service on the 3-ft. 6-in. gauge Central Australian Railway. The main contractor is the Birmingham Railway Carriage & Wagon Co. Ltd., which organisation is to build the mechanical portion and deliver the complete locomotives. Complete technical responsibility is, however, vested in Sulzer Brothers, and the locomotives are to be known as of Sulzer type. The four-stroke pressure-charged diesel engines are to be supplied by Sulzer Bros. (London) Ltd.; and the complete electrical transmission and control equipment by Crompton Parkinson Limited.

In a recent contract it has been agreed that the Eastern Bengal Railway will install signalling equipment, supplied by the Westinghouse Brake & Signal Co. Ltd., for the double-wire resignalling of eight stations in Eastern Pakistan. The stations of Shambhuganj, Gachihata, Nilganj, Shohagi, Ishwarganj and Nandail Road will be provided each with a 16-lever frame; Atharabari with 19 levers, and Kishorganj with 24.

For route and single line control, certain levers will be fitted with electric locks and/or circuit controllers; sidings will be controlled by key locks, for which the keys are released from levers. Stationmasters' control slides will be required for the supervision of route selection and signal operation; double-wire point mechanisms, incorporating broken-wire locks, are to be provided; together with signal mechanisms and arm fittings for 2- and 3-position signals; and double-wire compensators for simple and coupled transmissions.

The Sudan Government has recently placed a contract with Metropolitan-Cammell Carriage & Wagon Co. Ltd. for 50 underframes and bogies for covered goods wagons.

British Railways, London Midland Region, has recently placed the following contracts:—

The Demolition & Construction Co. Ltd., London, S.W.1: general building work in connection with the new chain store, main store and metal store at Bow locomotive works, London.

Cellacite & British Uralite Limited, Gravesend, Kent: 36 in. dia. protected metal extract roof ventilators for the machine shop, erecting shop north and erecting shop south at Crewe locomotive works.

Leonard Fairclough Limited, Adlington, Lancs.: reconstruction of the superstructure and provision of a new trestle to bridge no. 36 carrying Green Lane over the railway at Ince Station for the Lancashire County Council.

John Booth & Sons (Bolton) Ltd., Bolton: supply and erection of steelwork for the renewal of the carriage shed roof at Accrington.

Industrial Engineering Limited, London, W.1: recovering Manchester Central Station roof with Robertsons Protective Metal Sheet.

The High Commissioner for Pakistan is inviting tenders for 13 metre gauge diesel shunting locomotives. Forms of tender are returnable by noon, October 27, to the Director General (Railways), Railway Division, Ministry of Communications, Government of Pakistan. Further details are given under Official Notices on page 223 of this issue.

Notes and News

Mercury Arc Rectifiers in Traction.—In the letter from Mr. W. J. Arnold Sykes in our August 17 issue the speed of the d.c. locomotive, printed as 37.5 m.p.h., should have been 27.5 m.p.h.

Excursions for Seaside Illuminations.—Amongst the seaside resorts mentioned on page 186 of last week's issue to which special trains are being run by the North Eastern Region, Seaham was included in error; the name should have read Seaburn.

Labour Dispute at Heysham.—The sailing of British Railways steamer from Heysham to Belfast on the evening of August 21 was cancelled because of labour trouble at Heysham. Passengers were transferred to a special train which conveyed them to Stranraer, to join the steamer for Larne.

Tyne Improvement Commission.—Applications are invited for appointments in connection with the design, maintenance and construction of dock and harbour works, of an assistant civil engineer and an assistant mechanical engineer. Applicants for both appointments should be under 45 years of age. See Official Notices on page 223.

Wagon Containing Acid on Fire.—A 10-ton open wagon containing 67 carboys of hydrochloric acid caught fire as the train of which it formed part was running between Deri Junction and Fochriw, Western Region, on August 17. The train was divided and the front part, with the blazing wagon, was hauled to Fochriw, where firemen and railwaymen saved all but seven of the carboys.

Mr. Elliot's Tour in Eastern Region.—The Chairman of the Railway Executive, Mr. John Elliot, accompanied by headquarters staff of the Executive and by officers of the Eastern Region, visited Harwich and Ipswich on July 17. At Parkeston Quay

and Harwich, port installations were inspected, and a visit paid to s.s. *Arnheim* and m.v. *Norfolk Ferry*. Ipswich motive power depot also was inspected.

Collision at Newcastle Central Station.—The Ministry of Transport enquiry into the accident at Newcastle Central Station, North Eastern Region, on August 17, when the outgoing 10.35 a.m. electric passenger train Newcastle to Newcastle via Wallsend, came into collision with the incoming 9.35 a.m. electric passenger train Newcastle to Newcastle via Benton, will be opened by Colonel G. R. S. Wilson, Chief Inspecting Officer of Railways, in the Board Room, Newcastle Central Station, on August 29, at 11 a.m. Two persons were killed in the accident and of the 23 injured who were taken to hospital, ten were detained; one died subsequently.

Some Railway Shortcomings.—In the letter under the pseudonym "Omen" in our August 17 issue, "employees" in para. 7, line 3, should read "employers," and "me" in para. 9, line 7, should read "No. 1."

Railway Trades Unions and B.T.C. Finances.—Mr. Harold Wilson, former President of the Board of Trade, has accepted an invitation by the three railway trade unions, the N.U.R., A.S.L.E.F., and T.S.S.A., to carry out an examination of the financial structure of the British Transport Commission. Mr. G. B. Thorneycroft, General Secretary of the T.S.S.A., has stated that the unions are asking Mr. Wilson to carry out this investigation with a view to easing the burdens on the Commission in respect of the railways.

Report on Manpower.—An economic survey by the Treasury, "Report on Manpower," published recently states the demands of rearmament will have to be met by a rearrangement of Britain's labour force rather than an increase. Substantial releases from less important production must occur if the defence programme is to be carried out. "There is



Left to right: Mr. J. L. Harrington, Chief Officer (Marine & Administration) Railway Executive; Mr. A. J. White, Assistant Chief Regional Officer, Eastern Region; Captain R. Davis, Marine Superintendent, Eastern Region; Mr. John Elliot; Mr. C. G. G. Dandridge, Commercial Superintendent, Eastern Region; (right, in background) Mr. C. K. Bird, Chief Regional Officer, Eastern Region

OFFICIAL NOTICES

TYNE IMPROVEMENT COMMISSION

APPOINTMENT OF ASSISTANT ENGINEERS

APPPLICATIONS are invited for the following appointments in connection with the design, maintenance and construction of dock and harbour works:—

(1) ASSISTANT CIVIL ENGINEER.

(2) ASSISTANT MECHANICAL ENGINEER.

Applicants for the first position must be Chartered Civil Engineers having considerable experience in the design and construction under contract and by direct labour, of structural steelwork, jetties, quays, railway layouts, buildings and other works appertaining to port installations. Applicants for the second position should preferably hold a University Degree and have had considerable experience in workshop and design practice in general mechanical engineering and be capable of preparing contract particulars (including drawings) and supervising the construction and installation of electric dockside cargo cranes, pumping machinery, belt conveyors, locomotives (steam and diesel), etc. Applicants for both appointments, who should be under the age of 45 years, will be required to pass a medical examination and to become members of the Commissioners' Superannuation Fund. Commencing salaries will be fixed according to qualifications and experience. Applications stating age, education and training, professional qualifications, experience in the preparation of plans, contract particulars and construction of civil and/or mechanical engineering works, and giving the names of two referees should be addressed to the undersigned (endorsed as to the appointment applied for) so as to be received not later than September 15, 1951.

J. K. MCKENDRICK,

Secretary.

Tyne Improvement Commission,
Bewick Street,
Newcastle-upon-Tyne, 1.
August 13, 1951

THE High Commissioner for Pakistan invites tenders for the supply of: 13 metre-gauge (3 ft. 3½ in.) Diesel Shunting Locomotives. Forms of tender, which are returnable by noon on October 27, 1951, to the Director-General (Railways), Railway Division, Ministry of Communications, Government of Pakistan, Karachi, may be obtained from the Commercial Secretary, Supply and Stores Department, 40, Lowndes Square, London, S.W.1, between the hours of 10 a.m. and 4 p.m. Monday to Friday on payment of a fee of £10 (not returnable) per tender. The reference SS.7224 should be quoted on all applications for tender forms.

INTERNATIONAL RAILWAY ASSOCIATIONS. Notes on the work of the various associations concerned with International traffic, principally on the European Continent. 2s. By post 2s. 2d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

TRANSPORT ADMINISTRATION IN TROPICAL DEPENDENCIES. By George V. O. Bulkeley, C.B.E., M.I.Mech.E. With chapters on Finance, Accounting and Statistical Method. In collaboration with Ernest J. Smith, F.C.I.S., formerly Chief Accountant, Nigerian Government Railway. 190 pages Medium 8vo. Full cloth. Price 20s. By post 20s. 6d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

GLOSSARY OF WOOD. A technical dictionary for all associated with timber and its uses. Ten thousand terms about timber—the common and the little known, the old and the new. Ten thousand definitions covering the entire field of timber and its uses—growth, marketing, utilisation. The commercial timbers, their qualities and uses, tools and wood-working equipment, are all here explained simply, concisely and accurately. Illustrated by many clear line drawings. Price 21s. net. By post 21s. 9d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

evidence," states the report, "that some firms are retaining labour by introducing short time, while in the same areas other firms engaged on rearmament contracts or production for export have urgent vacancies which they are unable to fill. If this practice persists or becomes more widespread, parts of the defence programme will be seriously held up."

New Loan for the East African Railways.—In the next session of the Central Legislative Assembly in September the East Africa High Commission will introduce a Bill authorising the raising of a £3,500,000 loan. It is in addition to the £23,000,000 loan sanctioned in 1949, and will cover the proposed acquisition of new rolling stock.

Diversion of Coal for Locomotives.—To meet an emergency caused by heavy holiday passenger traffic in the Eastern Region, the National Coal Board last weekend authorised diversion of wagon loads of household coal, consigned to coal merchants in the Southend district, for locomotive purposes on the Southend Section. Some 13 wagons were diverted. The amount taken was replaced by the Coal Board.

The Model Engineer Exhibition.—The 1951 Model Engineer Exhibition was opened at the New Royal Horticultural Hall, London, S.W.1, on August 22, and will be open daily between 11 a.m. and 9 p.m., except Sundays, until September 1. A variety of railway models has been entered in the competition section, and one of the principal features of the exhibition is a "00" gauge model railway layout designed and constructed by the Ilford Model Railway Club.

Improvement at Kings Cross Station.—To improve the facilities for passengers at Kings Cross Station the left luggage accommodation is to be extended and modernised. The improvements involve the extension of the public lobby and the provision of a new counter and screen almost twice the length of the existing ones. The storage space for luggage will

also be considerably increased. A feature of the new counter is the luggage bays, through which the passenger passes his luggage. These will be only 2 ft. 3 in. in height and will have roller tops, facilitating the handling of heavy suitcases. Provision is made also for the future inclusion of automatic luggage lockers. These will be situated in an annexe to the public lobby and will be available to the public at all times. Here it will be possible, by the "help yourself" system, to have the sole use of a locker for 24 hr. or longer by payment of an additional fee. Each locker is quite independent of the others and can be opened only by a key released on insertion of a sixpence in the slot. It is retained by the user until the property is required.

International Transport Workers' Federation.—Mr. J. B. Figgins, General Secretary of the National Union of Railwaymen, was President of the railway section of the International Transport Workers' Federation which met recently at Utrecht. The Associated Society of Locomotive Engineers & Firemen and the Transport Salaried Staffs' Association also were represented. The meeting recommended abolition of first class on the railways, as potential first class passengers now went by air.

East Indian Railway Dinner.—The 48th annual dinner of the East Indian Railway Officers' Association will take place at the Connaught Rooms, Great Queen Street, Kingsway, London, W.C.2, on September 26. The chairman will be Mr. O. R. Tucker. The Honorary Secretary of the dinner is Mr. E. H. N. Lowther, The Little Gables, Folder's Lane, Burgess Hill, Sussex. The usual complementary tea party will be held at St. Ermins Hotel, Caxton Street, Westminster, S.W.1, on September 27. The Honorary Secretary is Miss Mona Cambridge, 8, Golders Rise, Hendon, N.W.4.

Stewarts and Lloyds Limited; Exhibits at Olympia.—Stewarts and Lloyds Limited, together with its associated and subsidiary companies, will be exhibiting a selected

WE buy used or unserviceable Steel Files at good prices in lots of 2 cwts. or more.—THOS. W. WARD LIMITED, R. S. Department, Albion Works, Sheffield.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

RAILWAY MAINTENANCE PROBLEMS. By H. A. Hull (late District Engineer, L.M.S.R.). Valuable information. With much sound advice upon the upkeep of permanent way. Cloth, 81 in. by 5½ in. 82 pp. Diagrams. 5s. By post 5s. 3d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

RAILWAY SIGNALLING AND COMMUNICATIONS INSTALLATION AND MAINTENANCE. A practical guide, especially intended to help Signal Inspectors, Installers, Fitters, Linesmen, Draughtsmen, and all concerned with installing and maintaining Signal, Telegraph, and Telephone Equipment. 416 pp. Many illustrations. Cloth. 8s. By post 8s. 6d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

THE "PAGET" LOCOMOTIVE. Hitherto unpublished details of Sir Cecil Paget's heroic experiments. Eight single-acting cylinders with rotary valves. An application of the principles of the Williams central-valve engine to the steam locomotive. By James Clayton, M.B.E., M.I.Mech.E. Reprinted from *The Railway Gazette*, November 2, 1945. Price 2s. Post free 2s. 3d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

range of products at the Engineering, Marine & Welding Exhibition, which opens on August 30. For the first time S & L electric resistance weld boiler tubes will be on view. Also featured will be a series of colour transparencies illustrating sequences in the manufacture, protection, and laying of large diameter steel mains, samples of bituminised glass-tissue wrapping and bitumen lining for small diameter tubes, and Victoulc joints and Viking Johnson couplings. Tubewrights Limited will show examples of welding technique, consisting of samples illustrating the normal standard of their products, and also four tubular steel Tripoles with cross-arms and insulators for power transmission. These are devised primarily for the export market.

Postponement of B.T.C. Charges Schemes.—The Minister of Transport, Mr. Alfred Barnes, has granted the application of the British Transport Commission, for a further period of two years from August 6, 1951, for the preparation and submission to the Transport Tribunal of the Commission's draft charges schemes. It is stated that the further period is likely to be required for the draft dock charges scheme. The application for postponement of the merchandise charges scheme was due to be lodged with the Tribunal on August 5, and was the subject of editorial comment in our July 27 issue.

Alleged Colour Bar on Railways.—Allegations that at various stations of British Railways a "vigorous colour bar" is being enforced by members of the N.U.R. have been made in correspondence between the vacation work organiser of the National Union of Students and the Railway Executive. Mr. W. P. Allen, Member of the Railway Executive, has stated that so far as the Railway Executive is concerned there is no bar against the employment of coloured labour on British Railways, both as to railway employment and membership of unions. Notwithstanding this, he adds, difficulties occasionally arise with the white staff at stations who object to working with coloured labour. The statement,

Mr. Allen continues, of Mr. H. Eccles, District Goods Superintendent, Broad Street, L.M.R., that there had been objection to coloured labour at some of the larger L.M.R. goods stations, does not in any way affect the policy of the Railway Executive. Mr. J. B. Figgins, General Secretary of the N.U.R., has stated that any form of colour bar is against N.U.R. policy.

Scottish Region Branch Lines Closed.—

As from Monday, September 10, the passenger train service will be withdrawn from the following Scottish Region branch lines: Polton, Wilsontown, Penicuik, and Selkirk. On the Polton branch passenger train parcels and miscellaneous traffic for Lasswade, and Polton, will be conveyed by freight train, or road motor, to connect with the passenger train service. Similar traffic for Broomieknowe will be dealt with at Bonnyrigg Station. At Wilsontown Station passenger train parcels and miscellaneous traffic will continue to be dealt with and similar traffic for Haywood will be dealt with at either Wilsontown or Auchengray Stations. Penicuik Station, and Lindean and Selkirk Stations will also continue to handle passenger train parcels and miscellaneous traffic.

Motor Starters and Control Switches.—

This year Brookhirst Switchgear Limited will show at the Engineering, Marine & Welding Exhibition a selection of new designs of a.c. and d.c. motor starters for industrial and marine service. Hand-operated and automatic starters of various types for wall or floor mounting will be on view. A selection of accessories, such as push-buttons, limit switches, and control switches will complete the display on this stand.

Ruston & Hornsby Limited.—The directors of Ruston & Hornsby Limited propose to increase the dividend on the £4,100,000 ordinary stock from $7\frac{1}{2}$ per cent to 9 per cent. for the year ended March 31. The group net profit for the year is £746,975 as compared with £769,017 for the previous year. The balance is struck after deducting United Kingdom taxation £1,040,407, against £978,393, depreciation £280,283, against £220,609, amount set aside for increased cost of plant replacement £120,000, against £75,000, and debenture and other interest £15,750, against £19,409. This balance includes income from trade and other investments.

Forthcoming Meetings

Until September 1 (*Sat.*).—The Model Engineer Exhibition, at the New Royal Horticultural Hall, Westminster, S.W.1, 11 a.m. to 9 p.m. daily, except Sunday.

August 25 (*Sat.*).—Permanent Way Institution, London Section, visit to Barclay Perkins & Co. Ltd, Southwark Brewery. Members of the party will assemble at London Bridge Station at 1.30 p.m.

September 1 (*Sat.*).—Stephenson Locomotive Society, Scottish Centres, tour by special train over routes not usually used for passenger traffic, leaving Paisley (East Mineral) at about 2.45 p.m.

Railway Stock Market

Stock markets have maintained their recovery, and despite holidays, business in most sections was rather more active; this was the case particularly in the industrial sections, which have mostly recovered the fall after the initial shock of the dividend limitation plan. As was expected, there has been a fair amount of switching from shares hit by dividend limitation into shares which will not be forced to reduce their payments if the Gaitskell "freeze" becomes law. Nevertheless caution is the keynote although it is assumed in many quarters that a general election may prevent dividend limitation from passing into law. Moreover, too much importance should not be attached to immediate dividend yields, and a longer view should be taken.

The Gaitskell plan, if it becomes law, will be scheduled to last for three years; but it is felt in the City that it is most unlikely to last so long, because of election prospects. Nevertheless, taking more than a short view, competition is bound to increase, with both Germany and Japan back in world markets, and many companies may be unable to maintain last year's dividend rates over a period. Last year's results covered a period when trading conditions in export markets were exceptionally favourable; but costs and prices of materials have since risen sharply, and the terms of trade appear to be moving against the U.K. in many directions. Consequently shares showing only moderate yields on their "Gaitskell dividends" may prove sounder investments than many which offer apparently generous yields at the moment.

Foreign rails have continued to attract more attention in common with other overseas securities which are unaffected by our dividend freeze. United of Havana stocks remained prominent on speculative demand in the hope of reasonable nationalisation terms resulting from the present discussions; though even if these hopes are realised, it cannot be assumed that they will mean an immediate pay-out for holders of the various stocks. Sentiment has continued to be helped by the view that the recent Anglo-Cuban trade agreement forms a hopeful background for assuming that United of Havana stockholders will be treated with reasonable fairness. At the time of going to press the 1906 5 per cent. debentures have risen to $22\frac{1}{2}$, the 4 per cent. debentures to $12\frac{1}{2}$, the

$4\frac{1}{2}$ per cent. debentures to $7\frac{1}{2}$, while the $4\frac{1}{2}$ per cent. Cuban debentures have been strong at 52 and the $5\frac{1}{2}$ per cent. Cuban Central debentures were 9.

Antofagasta ordinary and preference remained prominent again, though best levels were not held, the big gains in recent weeks having attracted a fair amount of profit-taking. Fresh buyers, however, have been coming in particularly for the preference stock, which it is hoped in the market may receive $7\frac{1}{2}$ per cent this year in respect of preference dividend arrears, and on this basis there is a yield of over 10 per cent. at the current price of 73 $\frac{1}{2}$. The ordinary stock has been active around 15 $\frac{1}{2}$ partly on the hope that there may be a scheme in the future to find outstanding preference dividend arrears. Moreover, it is contended that if the railway were ever nationalised, ordinary stockholders would be entitled to receive the equivalent of several times the current market price, which gives very little regard to the present day value of assets.

San Paulo 10s. units at 14s. 7 $\frac{1}{2}$ d. remained under the influence of the company's annual report which has increased fears that a considerable period may have to elapse before there is a final settlement of the company's additional compensation claims.

Nitrate Rails were 23s. 9d., Taltal 19s., while Bolivar "C" debentures were 75 and La Guaira ordinary stock 90 $\frac{1}{2}$.

Leopoldina stocks have been firmer with the ordinary at 10 $\frac{1}{2}$, the preference 26 $\frac{1}{2}$, the 4 per cent. debentures 93 $\frac{1}{2}$ and the 6 $\frac{1}{2}$ per cent. debentures 141. Manila issues were better with the "A" debentures at 82 and the preference shares at 9s.

Canadian Pacifics were less firm around 59, although still active on Canada's important oil developments and also on higher dividend hopes.

Engineering shares have been affected to some extent by higher wage claims and by the increase in the price of steel. Guest Keen at 61s. 3d. have not held best levels and Babcock & Wilcox were 76s. Vickers at close on 48s. 9d. reflected hopes that the forthcoming interim dividend may be maintained at last year's slightly higher rate of 2 $\frac{1}{2}$ per cent.

Locomotive building and engineering shares showed Vulcan Foundry at 28s. 9d., North British Locomotive at 19s., while Beyer Peacock were 31s. 3d. Hurst Nelson 59s. 3d., Gloucester Wagon 16s. 3d. Charles Roberts £5 and Wagon Repairs 5s. shares 14s. 9d.

Traffic Table of Overseas and Foreign Railways

Railway	Miles open	Week ended	Traffics for week		No. of week	Aggregate traffics to date				
			Total this year	Inc. or dec. compared with 1949/50		Total	Increase or decrease			
						1950/51				
South & Cen. America	Antofagasta ...	811	10.8.51	£ 116,940	+	£ 56,090	32	3,779,890	+	£ 1,831,486
	Costa Rica ...	281	June, 1951	c1,121,590	+	c25,461	52	c11,300,123	+	c720,146
	Dorada ...	70	June, 1951	36,543	+	12,762	26	213,760	+	17,412
	Inter. Ctl. Amer. ...	794	June, 1951	\$1,032,974	—	\$83,457	26	\$6,931,651	—	\$99,579
	Paraguay Cent. ...	274	10.8.51	/ 384,544	+	\$209,461	6	\$1,922,947	+	\$21,297
	Peru Corp. ...	1,050	July, 1951	\$7,925,000	+	\$450,000	4	\$7,925,000	+	\$450,000
	" (Bolivian Section)	66	July, 1951	Bs. 13,029,000	+	Bs. 5,468,030	4	Bs. 13,029,000	+	Bs. 5,468,000
	Salvador ...	100	May, 1951	c138,000	+	c31,000	48	c1,867,000	+	c136,000
	Taltal ...	147	July, 1951	\$1,790,000	+	\$558,100	4	\$1,790,000	+	\$558,100
Canada	Canadian National†	23,473	May, 1951	17,653,000	+	1,809,000	22	82,112,000	+	12,717,000
	Canadian Pacific†	17,037	June, 1951	12,146,000	+	1,372,000	26	68,992,000	+	9,890,000
Various	Barsi Light* ...	167	June, 1951	30,435	+	1,447	13	113,112	+	23,872
	Egyptian Delta ...	607	10.4.51	17,513	—	267	4	17,513	—	267
	Gold Coast ...	536	June, 1951	246,509	+	10,058	13	803,671	+	81,153
	Mid. of W. Australia	277	May, 1951	55,547	+	19,139	48	454,081	+	108,823
	South Africa ...	13,398	28.7.51	1,899,376	+	242,165	17	32,098,564	+	4,840,737
	Victoria ...	4,744	Mar., 1951	1,811,748	—	163,026	39	—	—	—

* Receipts are calculated at 1s. 6d. to the rupee

† Calculated at \$3 to £1